TECHNOLOGY DEPT.

SEPTEMBER, 1952

Telephone Engineer *and Management*

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THE NATIONAL TELEPHONE MAGAZINE

Featuring In This Issue—

- Cable Layout Planning & Recording, by John S. Reed
- Maintenance of Open-Wire Lines, by Myrle Shafer
- Construction—Maintenance—Service, by John S. Reed
- Modern Construction Methods, by Richard Allen

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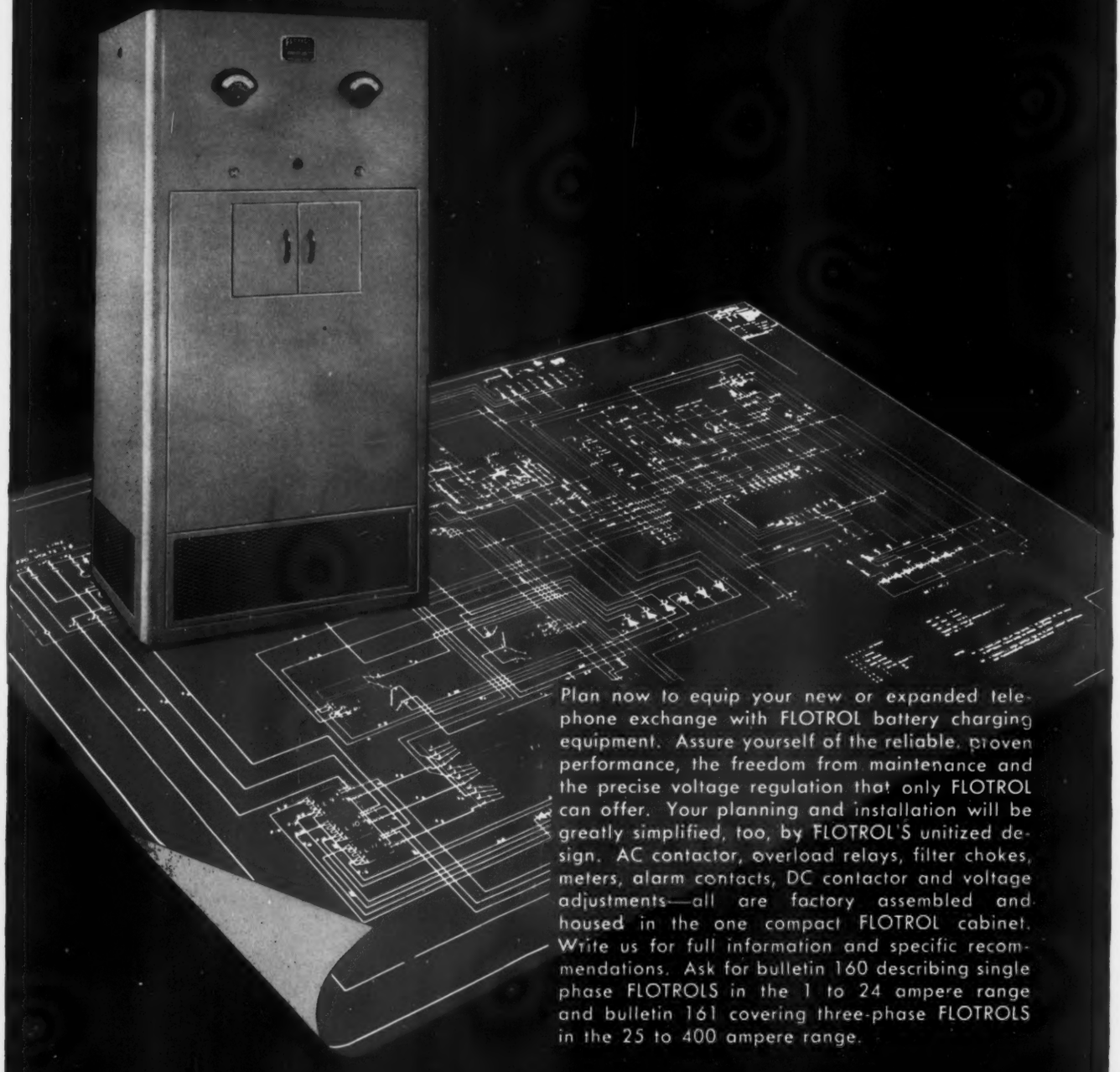

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Across The Editor's Desk

The Minneapolis (Minn.) Star featured Elnathan C. Gates, president of the Minnesota Telephone Association and vice president & general manager of the Minnesota Telephone Company, in their issue of August 15. The article traced the history of the Gates family and recounted the experience of his late father Dr. J. A. Gates who organized a telephone company in 1899, the company that was converted to automatic operation at Kenyon, Minn. by his son Elnathan.

• • •

Good news to Independent Pioneers in their coming convention program. Chairman Roy Siemund of the Program Committee has just announced that "The Northerners", a choral group, will be on the Pioneer program. This group, all employees of the Northern Trust Co., Chicago, are nationally known from their appearances on radio and stage. This feature, plus having the famous Red Motley as principal speaker will make the Pioneer program one of the features of the national Convention.

• • •

We salute Mr. Dale H. Comparette, Kerrville, Texas, as a real pioneer and friend, and mourn with the industry his passing on August 3. He entered the telephone business in 1895. Until his death he served as vice president and general manager of the Kerrville Telephone Co. His son, Dale H. Jr. is at present a member of the board of the Texas Telephone Company. Mr. Comparette Sr. served his community and the telephone industry well and is noted for his philanthopies during his lifetime.

• • •

On October 1 our Pre-Convention Number of Fortnightly TELEPHONE ENGINEER will be mailed to each of you. In it you will read and see much that is in store for those of you who attend the 55th Annual Convention of the U. S. Independent Telephone Association at the Conrad Hilton Hotel, Chicago, October 13, 14 and 15. We hope you will visit with us while you are in Chicago.

The National Telephone Magazine

Telephone and Management Engineer

SEPTEMBER, 1952 VOL. 56, NUMBER 9

Editor, RAY W. SMITH • *Advertising Director,* ROY F. SMITH
Managing Editor, JOHN G. REYNOLDS
Financial Editor, ALBERT W. KIMBER
Production Manager, VIRGINIA McCOLLUM
Advertising Manager, DON C. SORENSEN
Washington Bureau, ROLAND C. DAVIES *and* FRED HENCK
Circulation Manager, VIOLET ALTMEYER

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FRONT COVER

Mayor Ralph Willis, Columbia, Ky., places first call over new automatic system recently cutover at Columbia. Standing (l. to r.): G. A. Klein, pres., So. Continental Tel. Co.; J. L. Zieg, dist. mgr., So. Continental Tel. Co., and Earle Blomeyer, vice pres. of the Southern Continental company.

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GraybaR TELEPHONE NEWS

MR. GILLILAND'S NEW CONTRAPTION!

In 1885, the Gilliland "Harness" represented the ultimate in operator headsets. Aptly named, it weighed over 6½ pounds — thus limiting the selection of switchboard operators to only the most sturdy and robust applicants.

The Gilliland **Harness**, however, pointed up the importance of operator comfort. As a result, headsets today are available via Graybar weighing as little as 6¼ oz. In addition, Graybar has helped many independent telephone companies plan for building-wide comfort of personnel through proper lighting and ventilation.

MAGNETO SERVICE CAN BE MODERN, TOO!

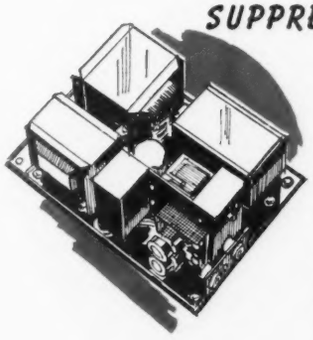
Sleek, handsomely-styled magneto telephone desk sets keep pace with modern living. Ideal for long, heavily-loaded rural lines, they offer your most distant subscribers ultra-clear reception and transmission, as well as reliable ringing. They're easily converted at any time for common battery operation. You can get both magneto and common battery instruments from your local Graybar office.

At the other end of the line, Graybar offers you a complete selection of magneto switchboards . . . common battery switchboards . . . combination common battery and magneto units.

THIS MAN CAN HELP YOU PLAN CENTRAL STATION AND POLE-LINE CONSTRUCTION

With more than 18 years of practical telephone experience behind him, the average Graybar Telephone Specialist is well-qualified to help you with your problems — feel free to call him for technical help at any time.

SUPPRESSES RADIO INTERFERENCE



Lorain SUB-CYCLE ringing machines feature built-in suppressors to eliminate radio interference . . . give long-term, trouble-free service. In like manner, Graybar-distributed battery chargers, battery eliminators, power plants and accessories are carefully engineered to provide maximum efficiency and minimum maintenance.

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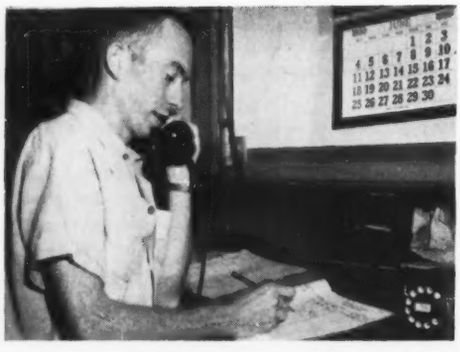
Myrle Shafer —digs into maintenance.

John S. Reed —explains cable layout.

In This Issue of Your TE&M

Jay G. Mitchell —answers a few puzzlers.

Dave Markstein —writes about safety.



Dick Allen —explains new methods

This month all the words, pictures and punctuation marks needed to build this issue of TE&M fell into the right places and the staff hopes it has an issue that will prove helpful to you. . . . This little front-of-the-book peek will let you know what's ahead.

A telephone executive told us the other day—"Lines clear of broken wires and similar faults have and have had an enormous part in building our reputation for good service. . . ." In his article, "Maintenance of Open Wire Lines" (Page 41) MYRLE SHAFER writes knowingly and helpfully to prove there's nothing like good maintenance to aid good service.

Someone (we forget the name) has described "Finance" as a "five-buck" word meaning "handling money" and "Bond" as an "IOU that draws rent". Our financial editor, ALBERT W. KIMBER, in his clear analysis of The Markets For New Capital (Page 47) covers the subjects of finance, bonds, etc. in a bit different manner as he tells you what's going on in the markets. If it's "money you're needing", Mr. Kimber's article is for you.

Your editors like to work with DICK ALLEN and he in turn likes to do the type of articles we assign to him—articles that point up the development of additional materials, devices and facilities. For this issue of TE&M Dick has prepared an article on "New Construction Methods" (see page 50) which presents many new ways and means of doing the job better. We hope you'll find it helpful.

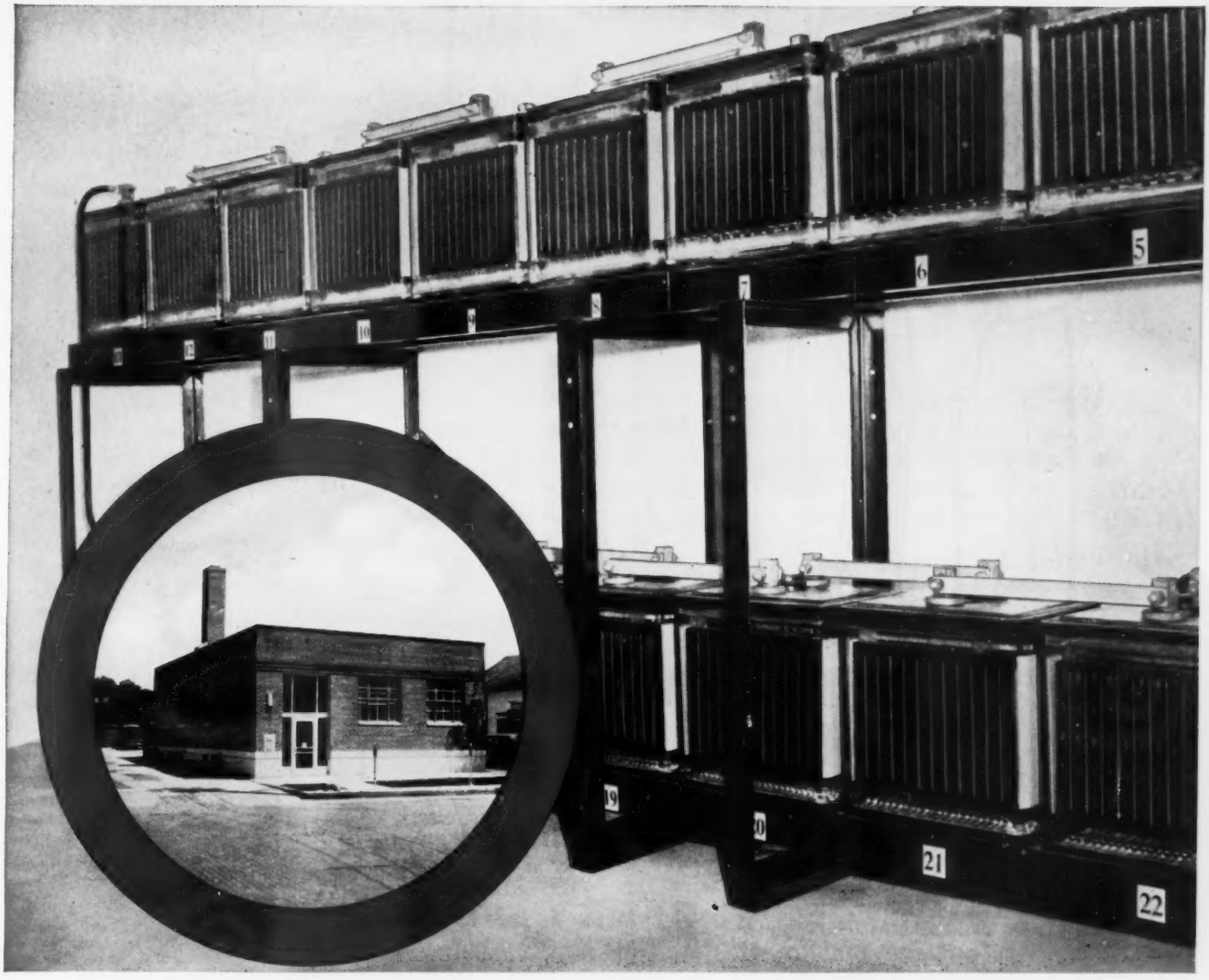
Weeks ago a reader wrote—"How about a good article on cable layout planning?" That reader and others interested in the why's how's and wherefore's of cable plant will find JOHN S. REED'S article—"Cable Layout Planning and Records" (page 36) answering a lot of your questions.

Author REED has really stuck at his typewriter. As a result he has other articles in this issue that will bring you up-to-date on how many telephone jobs are being done. On page 44 you'll find a timely article on "Good Construction, Proper Maintenance and Good Service" which proves it takes all three if you hope to have good rates. And, on page 62, Mr. Reed continues his discussion of "Modern Central Office Maintenance". This series has proved to be a hit with you readers. Thanks for your nice letters—keep them coming.

And there is plenty more good reading in this issue: "News Briefs" starting on page 12 is packed with bits about what's going on; "Washington Bureau Reports", by ROLAND DAVIES and FRED HENCK (see page 26) brings you the latest on what's happening in Washington; JAY G. MITCHELL answers some puzzling questions (see page 58); DAVE MARKSTEIN uses a new character to present a few ideas on safety. . . . Hope you like everything. . . . Let us know.

See you next month,

Your EDITORS



Wisconsin Dells Exchange of General Telephone Company of Wisconsin.

Two-step rack of 26-cell EME-25 Exide-Manchex Battery

IN WISCONSIN DELLS, DEPENDABLE, LONG-LASTING

Exide-Manchex BATTERIES

Here's a typical example of the telephone progress being made in the smaller communities of America's greatest dairy state. Just recently the Wisconsin Dells Exchange was converted to automatic operation with 1300 subscribers. Automatic equipment consists of 900 lines which handle approximately 10,000 calls per day. Equally modern and efficient is the battery that is used—Exide-Manchex, the battery that assures:

POSITIVE OPERATION: Dependable performance for all telephone battery requirements—central office and private branch exchange equipment.

ADEQUATE RESERVE POWER for emergencies beyond normal needs.

LOW OPERATING COST: High electrical efficiency.

LOW MAINTENANCE COSTS: Water required about twice a year. No change of chemical solution needed during life of battery.

LOW DEPRECIATION: Sturdy, long-life construction, which includes the exclusive manchester positive plate.

GREATER CAPACITY in a given amount of space avoids overcrowding of equipment.

• • •

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NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*

ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

NEWSLETTERS *on Alternate Weeks*

September 15, 1952

Dear Sir:

National Rural Electric Cooperatives Association (NRECA) presented to Gov. Adlai Stevenson, Democratic Presidential nominee, Aug. 26, at Springfield, Ill., program & policies which organization endorses for rural electrification & rural telephone expansion. The Democratic standard bearer, while he expressed interest, had no comment after conference.

NRECA representatives, headed by Pres. Clyde H. Seybold, Rockville, Ind., urged support by Governor Stevenson of more rapid expansion of rural telephone program. Group told Democratic nominee that more adequate administration by Rural Electrification Administration of program, & expansion of number of loans, could be obtained through availability of greater appropriations.

NRECA has requested conference with General Dwight D. Eisenhower, Republican Presidential candidate, & expects to have one shortly. When NRECA Board of Directors had its midsummer meeting in Denver, General Eisenhower was taking his brief vacation and could not be reached on request for conference. He sent NRECA Board message of greeting during its meeting, however.

* * *

Activity at both ends of the farm telephone program of Rural Electrification Administration -- several new loan allocations & several cutovers of REA-financed telephone service -- was reported last week of August by the agency.

Cutovers have taken place at Farmers Mutual Tel. Co., Shellsburg, Ia., Griswold (Ia.) Co-op Tel. Co., & Williston (S. C.) Tel. Co. Scheduled for early October are cutovers by Florala (Ala.) Tel. Co., recipient of REA's first farm telephone allocation, & Eastern Rowan Tel. Co., Granite Quarry, N. C. Nineteen cutovers expected in the September-December period.

* * *

First rate case action of its type in postwar period -- agreement between Ohio Bell & 17 protesting cities to recommend $16,750,000 rate increase, instead of original request for $23,100,000 -- was successfully concluded Aug. 27, when the Ohio commission approved rate increases to produce recommended amount.

New rates, including 10-cent coin box charge, were effective Sept. 1. In its order, commission said 4.94% rate of return which new rates are estimated to produce "is not excessive" or unreasonable.

* * *

New $2,178,000 Bell System construction program to supplement System's 1952 $60 million plan approved by FCC Feb. 25 was filed with Commission last week by American Tel. & Tel. Co. Long Lines Department

& 7 associated companies seeking approval for additional cable & carrier facilities in 5 new construction projects. New construction & installations would provide about 17,000 channel miles of telephone circuit facilities, about 57 additional channels for use in private line telegraph & teletypewriter exchange service, 3 additional single sideband carrier systems for program transmission, and 5 video channels.

* * *

"Statistics of The Communications Industry of the United States" for calendar year 1950, FCC publication containing financial & operating data filed with Commission by various communications companies, principally in annual reports, has been reproduced by Government Printing Office & was made available for public distribution Aug. 29. Cost of the document is 50¢ per copy.

* * *

HIGHLIGHTS: Withrow Tel. Co., Stillwater, Minn., was taken over by Northwestern Bell Tel. Co. . . . Choteau (Okla.) Tel. Co. incorporated by Mildred & Murle Tutty, Tulsa, & Marie Dent, Choteau . . . Mutual Tel. Co., Olds, Ia., plans dial system . . . Hugh Houchin is new manager of Pierce (Neb.) Tel. Co., Inc., following resignation of R. E. Dutcher . . . Craw Kan Tel. Co-op. Assoc., Inc., Girard, Kans., incorporated. John Frerichs is resident agent of co-op . . . James F. Gallivan, area mgr. of Rochester (N. Y.) Tel. Corp., retires this month after 31 years of service . . . United Tel. Co., Bellfontaine, O., installed new switchboard recently . . . General Tel. Co. of Wisconsin, Madison, completed dial system at Mauston, Wis., exchange . . . Union Tel. Co., Owosso, Mich., plans addition to building at Gaylord, Mich.

Roy R. Rea resigned as wire chief for Newport (Ark.) office of Southwestern Bell Tel. Co. to join staff of Joe E. Ward, consulting engineer, Wichita Falls, Tex. . . . Mr. & Mrs. Charles Kilgore are new managers of Jasper (Ark.) Tel. Exchange . . . Monroe Tel. Co-op., Inc., organized at Waterloo, Ill. Co-op will apply for REA loan. Officers: Fred C. Pieper, W. H. Asselmeier, Lee Hencke, Justin Ebert, Herman Schrader, Albert Altes, E. J. Tooke, A. F. Wortmann, A. F. Kolmer & P. F. Zoeller . . . Stockholders of Brighton (Ill.) Tel. Co. considering REA loan application . . . Jackson County Farm Bureau Rural Tel. Committee planning co-op at Marianna, Fla.

Hancock Rural Tel. Corp., Greenfield, Ind., granted construction contract to Weikel Construction Co., Fort Wayne . . . Cecil Elmore is leader of group planning REA co-op at Clarkson, Ky. Mr. Elmore plans purchase & improvement of exchange at Clarkson & conversion to automatic when REA funds are granted . . . W. R. Bacon, Glasgow, Ky., mgr. of Southern Continental Tel. Co., resigned to take managing position with South Central Rural Tel. Co-op., Glasgow.

Ray W. Smith, Editor

If your toll call revenues depend on PENCIL work!

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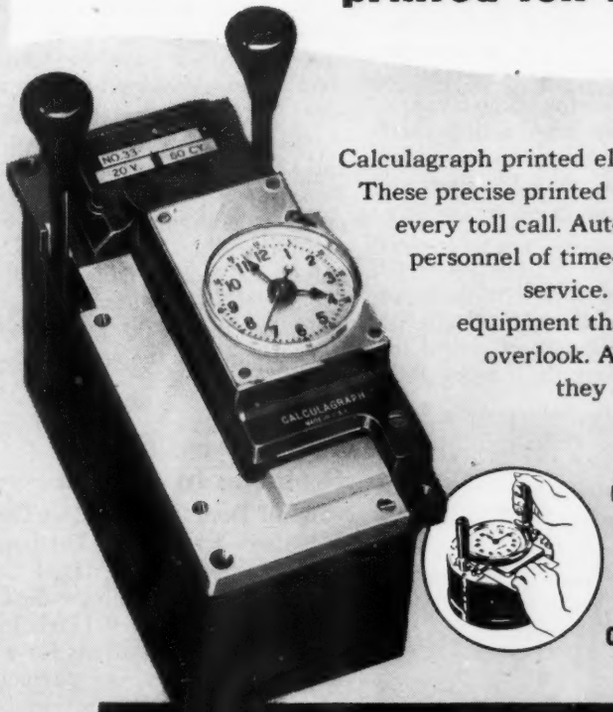
is one sure way to collect all the revenue due with accurate, automatically calculated, printed toll time records



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AUTOMATICALLY COMPUTES ELAPSED TIME
PRINTS THE RECORD FOR PERMANENT FILING
FACILITATES SWITCHBOARD SERVICE
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Industry News Briefs

Eugene McNeeley Elected An AT&T Vice President

EUGENE J. MCNEELEY has been elected a vice president of American Telephone & Telegraph Co. by the board of directors. Mr. McNeeley, who has been president of Northwestern Bell Telephone Co. since 1949, assumed his new post Sept. 1.

He will be in charge of the personnel relations department of A. T. & T. succeeding C. W. Phalen, who recently was elected president of the Michigan Bell Telephone Co.

A native of Jackson, Mo., and a University of Missouri graduate, Mr. McNeeley has spent his entire business career in the Bell system.

He was made operating vice president of the Northwestern Bell Telephone Co. in Jan. 1949, and was elected president of the company in Dec. of the same year.

Sanford B. Cousins, vice president and general manager of Bell Telephone Laboratories, became president of the Northwestern Bell in Omaha, succeeding Mr. McNeeley. Mr. Cousins has been general traffic manager in New York City and vice president and general manager of the New England Telephone & Telegraph Co.

Telephone Service Comes To Searchlight, Nev.

SEARCHLIGHT, the Nevada town with the most forward-looking name, is finally living up to its title. It now has telephones.

A six-telephone network now links Searchlight with the outside world for the first time. In the days prior to abandonment of the Santa Fe railroad's branch into the town, a ground line connected the town with the outside world, but this could only carry telegraph messages using the Morse system. The railroad line was abandoned early in the 1920's and since then the town has been without any type of "wire" service.

Sheriff Glenn Jones set up a radio tower there a few years ago but the service was limited to police calls and emergency messages.

U. S. Long Distance Telephone Co. installed the telephones, arranging to utilize the lines connecting Boulder City with Davis Dam.

Morris Osburn Leaves Missouri Commission

MORRIS E. OSBURN, who has served continuously as chairman of the Missouri Public Service Commission since he was appointed to that body in 1945, has resigned to enter private law practice in Jefferson City. Mr. Osburn has been an active participant in the affairs of the National Association of Railroad & Utilities Commissioners and at the time of his resignation, was a member of the Committees on Legislation and Valuation, the national organization said. Before being appointed to the state Commission, he served five terms in the Missouri House of Representatives and as Speaker of the House in 1941 and 1942.

Reese Named Chief Engnr. of General Tel. of Penn.

THE APPOINTMENT of Frank D. Reese as chief engineer of the General Telephone Co. of Pennsylvania has been announced by L. F. Shepherd, president of the company.

Mr. Reese has been acting chief engineer of the telephone company for five months, and his new appointment became effective on Aug. 1st.

E. C. Roys, formerly vice president and chief engineer, will continue as vice president of the company.

The new chief engineer joined the telephone company in June of 1939 as an equipment engineer. In August, 1948, he was made equipment engineering supervisor, and last March took over the duties as acting chief engineer.

Frank D. Reese, chief engineer of the General Telephone Co. of Pennsylvania.

A native of Cortland, N. Y., Mr. Reese was graduated from Loomis Institute, Windsor, Conn., after completing a science course, and received his Bachelor of Science degree in Mechanical Engineering from Cornell University in June, 1939. He has also completed three correspondence courses in telephoning engineering.

Mr. Reese is chairman of the Erie Section of the American Institute of Electrical Engineers, and is licensed in Pennsylvania as a professional engineer. He is also a member of the S. P. E. Fraternity in Ithaca, N. Y.

Mr. Reese served in World War II as a first lieutenant in the Signal Corps of the U. S. Army from September 1942 through December 1945, spending a year and seven months in the European Theater with the First Army.

Associated Tel. & Tel. Declares Dividend

THE BOARD OF Directors of Associated Telephone & Telegraph Co., at a meeting held Aug. 18, 1952 declared dividends of $3.50 per share on the 7% First Preferred Stock and $3.00 per share on the $6.00 First Preferred Stock payable October 1, 1952 to stockholders of record on Sept. 2, 1952. Payment of $1.75 per share on the 7% First Preferred Stock and $1.50 per share on the $6.00 First Preferred Stock is designated as payment of the regular dividends for the quarter ending Sept. 30, 1952. The balance of $1.75 per share on the 7% First Preferred Stock and $1.50 per share on the $6.00 First Preferred Stock applies to the accumulated dividend arrearages.

The Service Station Problem In Canada

A. R. DOUGLAS, Q. C., of Douglas, McCallum & Lamon, of London, Ont., has been retained as Legal Counsel for the Canadian Independent Telephone Association (CITA) in connection with negotiations for a share of Toll Revenues, or payment for services provided, for Service Station Systems in Ontario.

Mr. Douglas also represents a number of Service Station Systems who have also retained him in a similar capacity at the request of the CITA.

Of particular interest is the action (and result) taken by one Service Station System who some months ago advised the Bell Telephone Co. of

Canada that on and after June 18th they would discontinue collecting Long-Distance Tolls for the Bell Company. Late in May this S. S. Company was advised by the Bell Company that in view of the action taken, Bell would discontinue Long Distance Service to the company's subscribers and on September 1st, 1952, would also discontinue switching services to all their subscribers.

The S. S. Company so affected immediately contacted and retained Senator A. W. Roebuck, Q. C., of Toronto, as their legal counsel. Acting on their behalf, Senator Roebuck interviewed the Board of Transport Commissioners for Canada (at Ottawa) seeking a continuance of switching and long distance services pending a Hearing before the Board. The Canadian Independent Telephone Association was kept fully informed and endorsed fully the action, and subsequent action, taken by the company and its counsel.

On the advice of counsel, the company advised Bell that they would continue to collect Tolls and make payments to Bell as per contract pending the requested hearing and the handing down of a decision by the Board. Bell Telephone Company of Canada then agreed to continue long distance service and switching until September 1st, 1952.

Inspirer of Pay Telephone Dies

MRS. LOUISE BUBOER GRAY, 92, whose grave illness as a young woman inspired the invention of the pay telephone, died August 12 at Brookline, Mass.

In the 1880's, Mrs. Gray and her husband, William, were living in Hartford, Conn., when she became ill. Telephones were few and the husband had to go to a factory to get permission to call a doctor.

After his wife's recovery, Gray determined to make telephone service available to the public for a small fee. Between 1888 and 1902, he was granted 23 patents covering the basic rights to a pay telephone. Gray has since died.

Co-op Activities:

HORTON, KANS.—The Rainbow Telephone Cooperative Association, a newly incorporated organization to be financed through REA's rural telephone program, held the first meeting of its incorporators at the REA building in Horton recently.

The new association was formed through mergers of mutual telephone companies of Willis, Leona, Robinson, Huron and Everest.

New head of the Accounting Department of the Nebraska State Railway Commission is LeRoy Sieckmeyer who has been appointed acting chief accountant. He succeeds Keith Vogt who resigned July 1 to become secretary-treasurer of the Minnesota Telephone Association.

A native Nebraskan, Sieckmeyer graduated from the Lincoln School of Commerce in 1948 with a Business Administration degree after spending 3½ years in the U. S. Navy in World War II as a 2c Petty Officer, gunners mate. He worked for the Cushman Motor Works at Lincoln before becoming an assistant accountant with the Nebraska Commission where he has been employed for the past 4½ years.

Officers of the new association are: President, Emmett Oltjen; vice president, James Swartz of Everest; secretary, Melvin Kleppe of Leona; treasurer, Thomas S. Tollefson of Willis; directors, Georg K. Osborn, Everest; F. P. Korthanke of Robinson and Joseph Nelson of Horton.

BARNESVILLE, MINN.—At the recent annual meeting of the Barnesville Rural Telephone Association, nine directors were elected as follows:

For one-year terms—Donald Burgett, Rothsay; Hartvig Nelson, Barnesville; David H. Gunderson, Kent.

For two-year terms—Loren Braton, Barnesville; Ben Gorder, Galchutt, North Dak.; Clarence Packer, Barnesville.

For three-year terms—Joseph Briks, Rothsay; Fred Rolin, Rothsay; Walter W. Garven, Baker.

The meeting began with reading of the secretary's report by Budd Janecky, which showed 583 signed-up members and cash on hand of $2.570.

Ward Wrey, Fargo, N. Dak., REA director for the area, addressed the group and recommended that application be made at once for an REA loan.

HAVRE, MONT.—The Triangle Telephone Association, Inc. held its organizational meeting recently with more than 80 persons attending. The group will promote telephone service to unserved persons in Hill, Blaine, Liberty and Chouteau counties.

Harold Ebaugh, manager of the Hill County Electric Co-op, was chairman and Howard Wolle, REA field representative, and James Bowlin of the REA also were present.

It was decided to have sign-up meetings in various communities, first of which will be at Big Sandy, Havre and Rudyard for communities adjacent to these towns.

It is expected more than 2,500 miles of telephone line will be installed to serve about 2,000 users with automatic service in the area.

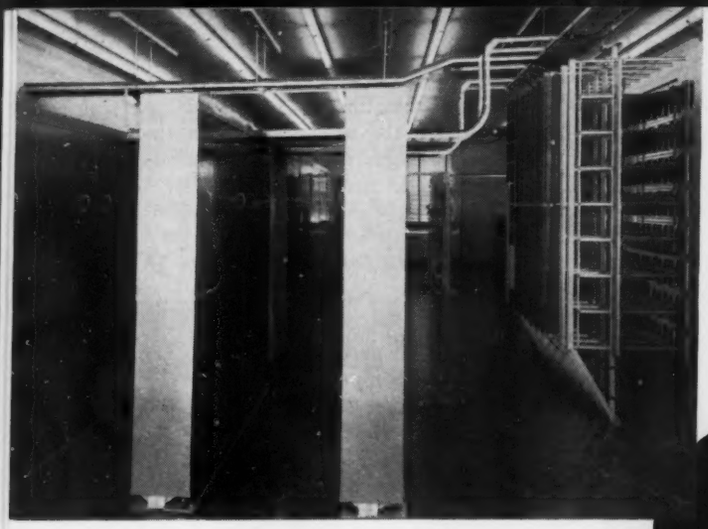
GRAND FORKS, N. D.:—The Polar Rural Telephone Aid Corp., recently incorporated co-operative, is expected to begin operation this fall, ultimately bringing telephone service to an estimated 5,000 rural members in this area of North Dakota.

According to James F. Coleman of Grand Forks, chairman of a statewide committee aiding the establishment of the telephone co-ops throughout the state, the Polar corporation will provide telephone service to 1,500 farms.

LANSFORD, N. D.—At a regular annual meeting of stockholders of the First Farmers Telephone Association of Lansford, the stockholders voted to sell all company assets to the newly formed Souris River Mutual Telephone Aid Co-op, Velva, N. D. A two year option was given to the new co-op with the understanding that they would apply for a loan to cover the purchase price and rebuilding price of this portion of the new telephone set-up.

At a regular election of the board of directors, Harry L. Diamond, Lester Convis, and H. W. Middaugh were re-elected. At a later meeting Otis Tossett was named president; Harry Diamond, vice-president; and Burl Hurdelbrink was re-elected secretary-treasurer. Other members of the board of directors are Oscar Fossum, Maxbass; Hubert Streitz, Foxholm; and Clarence Timms, Lansford. This board will act until such a time as

(Please turn to page 83)



Relaymatic Dial System

No. 3 Toll Board

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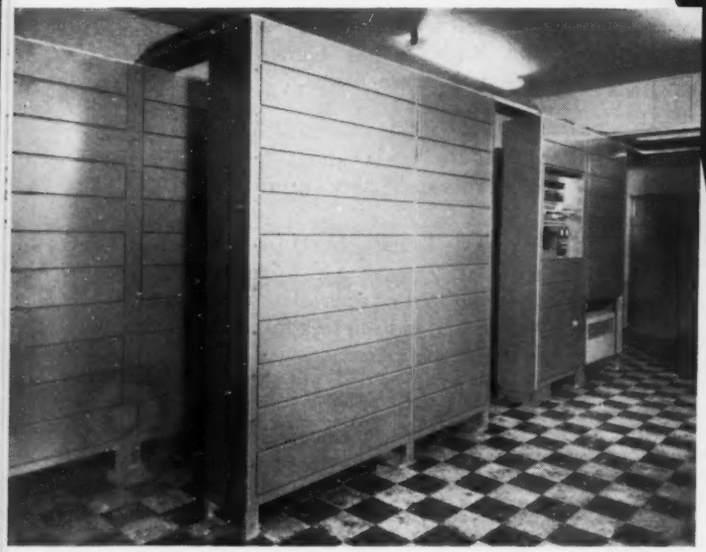
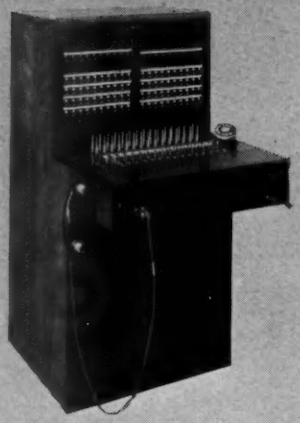


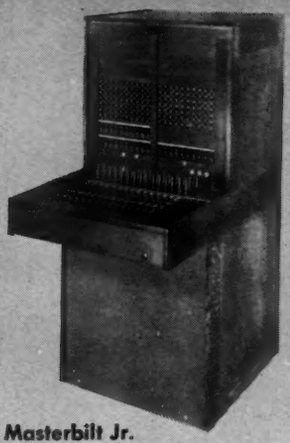
Crossbar

PABX

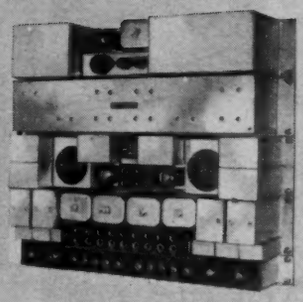
Step-by-Step



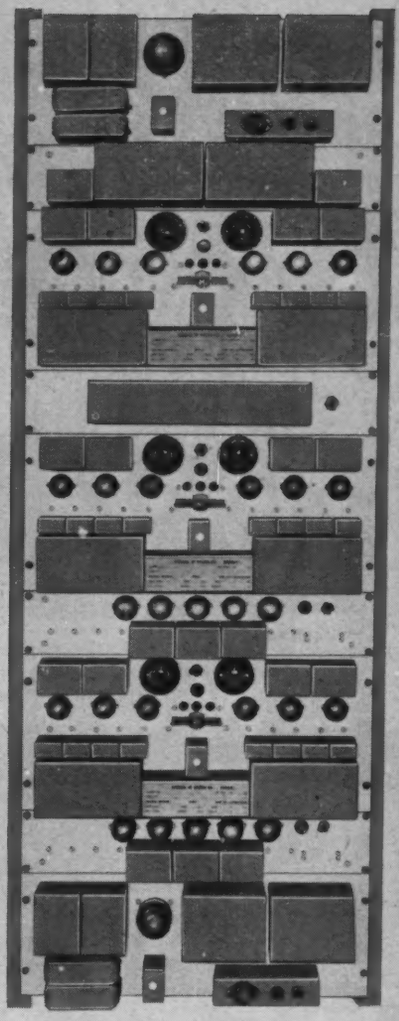
Floor Type PBX



Masterbilt Jr. Switchboard



Repeater



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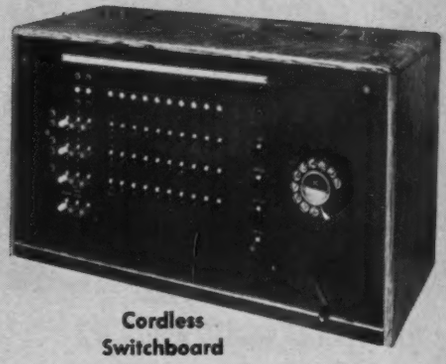

Cordless Switchboard

Desk Masterphone

Key BX

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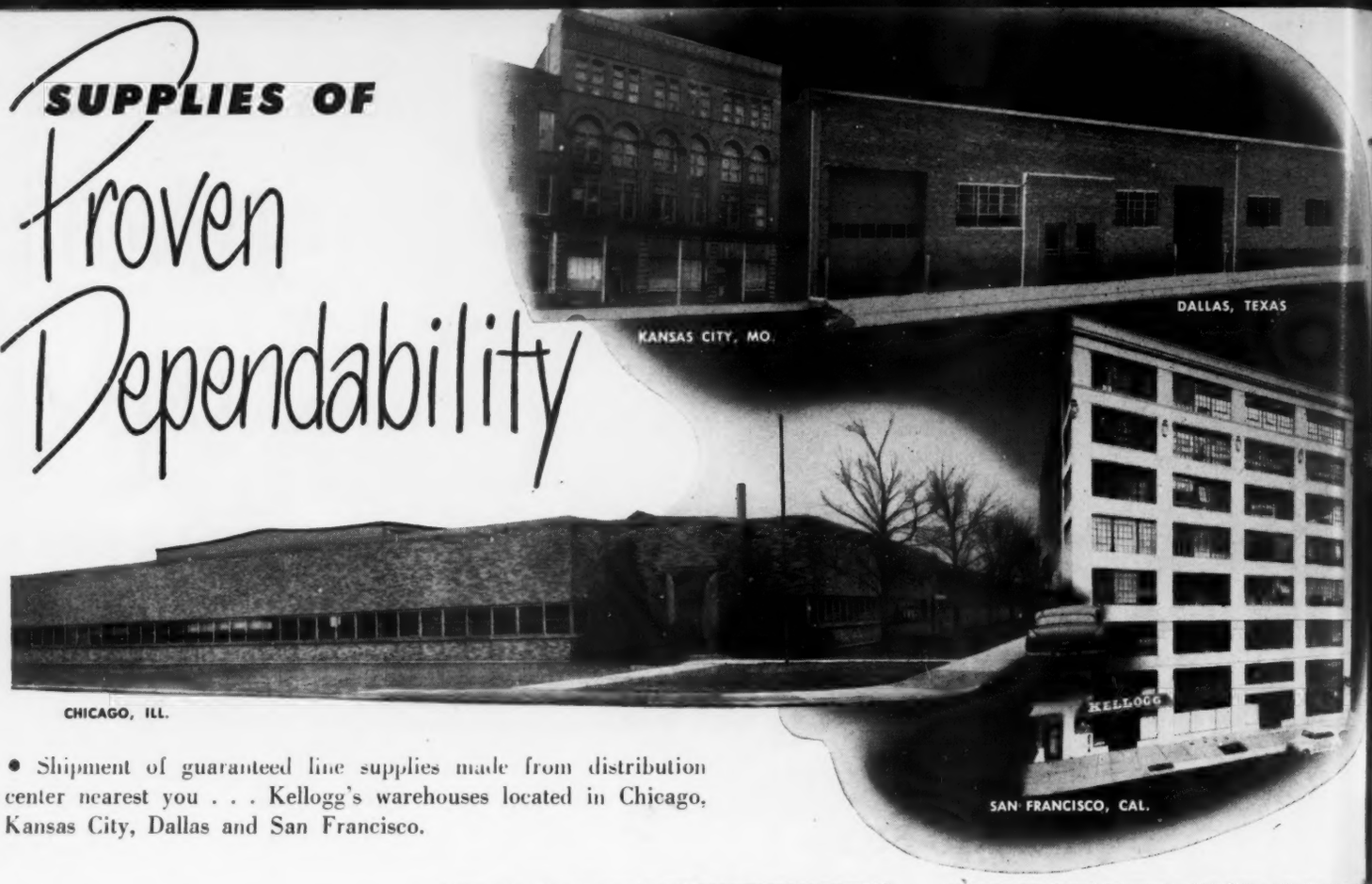

• Shipment of guaranteed line supplies made from distribution center nearest you . . . Kellogg's warehouses located in Chicago, Kansas City, Dallas and San Francisco.

The following nationally-known manufacturers of supplies for the independent telephone field are participating in the 1952 Kellogg Co-Operative Campaign.

American Creosote Works, Inc.

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Bishop Manufacturing Corp.

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Churchill Cabinet Company

Continental Cross-Arm Co.

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Copperweld Steel Company

The Electric Storage Battery Co.

General Insulated Wire Works, Inc.

Gould-National Battery Inc.

W. A. Hammond Drierite Company

Indiana Steel & Wire Company

Kester Solder Company

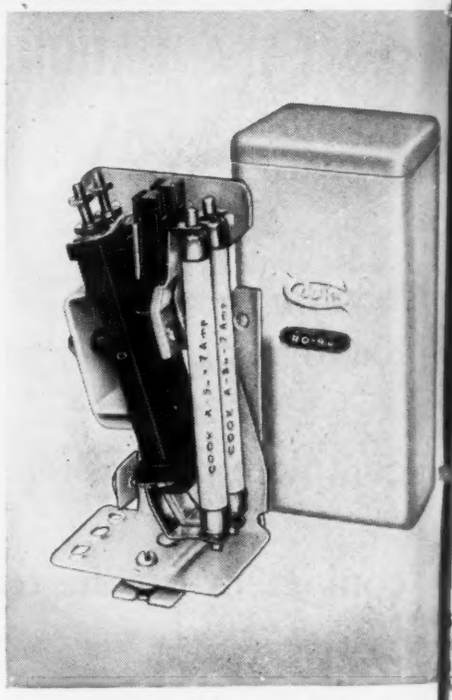
Lorain Products Corporation

T. J. Moss Tie Company

National Carbon Company
A Division of Union Carbide and Carbon Corporation

National Telephone Supply Co.

It Regulates—it Compensates Flotrol Battery Chargers assure continuous power savings by low standby losses combined with high overall efficiency. Compensation for variation in input voltage is automatic and practically instantaneous. Made by LORAIN PRODUCTS CORP.



Unusually Durable! The Type RO-9u Sub-Station Protector Mounting with the H-20 Protector unit is unusually durable. The fine quality Bakelite in Type H mount gives this protector high resistance to breakage caused by severe electric discharges. COOK ELECTRIC CO.

Newman Manufacturing Company

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Reliable Electric Company

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Schauer Manufacturing Corp.

Taca Cable Stripper Manufacturing Co.

Vulcan Electric Company

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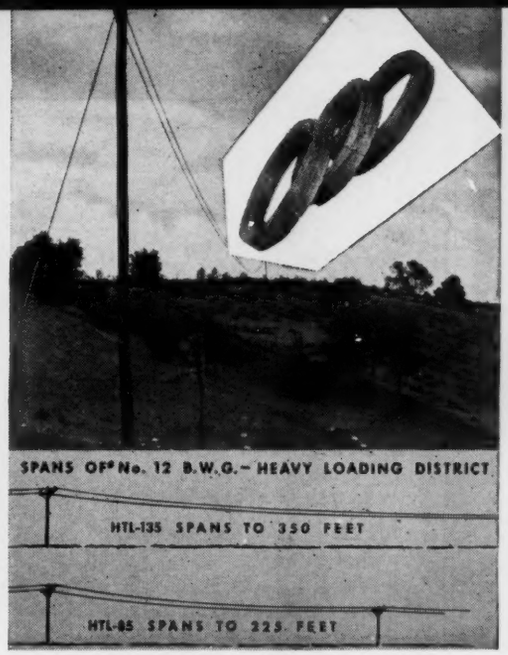
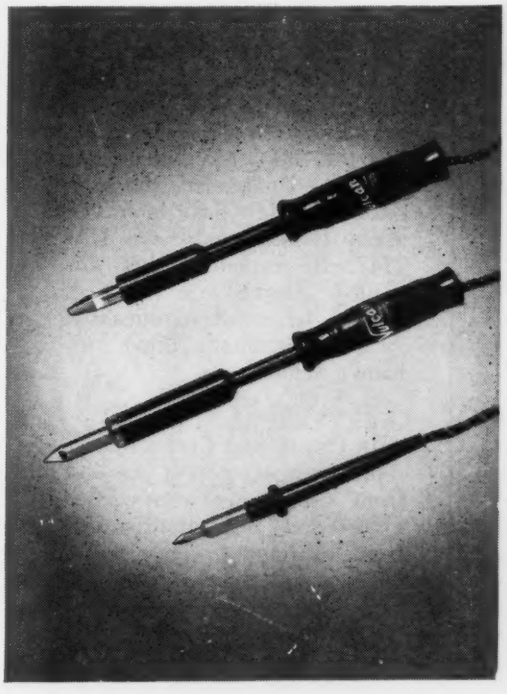
Cut "Trouble Shooting" Expense! — Install PARAGON ELECTRIC COMPANY'S top quality drop wire. Great tensile strength, high conductivity, and perfect adhesion are some of its outstanding qualities. This drop wire is available in Copperweld or High Tensile BB Bronze.



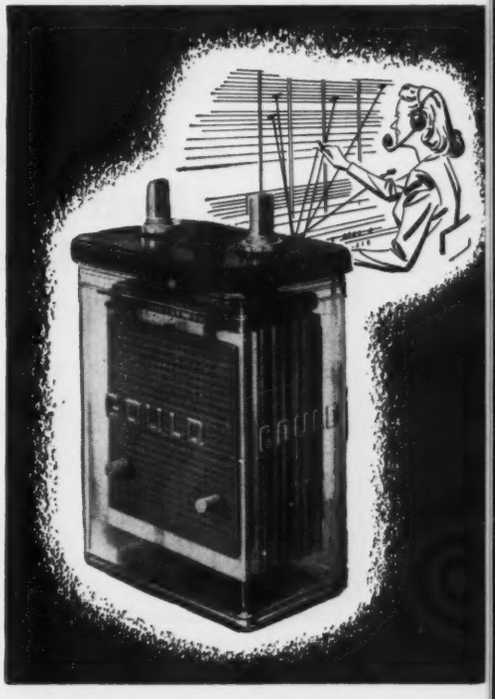
Save Three Ways . . . on materials, man-hours, and maintenance with INDIANA STEEL & WIRE CO.'S Crapo HTL-85 and HTL-135 Line Wire. Galvanized by the famous Crapo Galvanizing Process, it is protected with a heavy, ductile, tightly-adherent coating of zinc.

Drier Than A Desert! The quick, easy, positive way to dry splices in lead covered cables is to sprinkle Drierite Dessicant granules in among the conductors. This W. A. HAMMOND DRIERITE COMPANY product will not harm the sheath, conductors or insulation.

Simple, Quick and Sure! For splicing two wires of different sizes, there's nothing simpler than using Nicopress Reducing Sleeves and the Nicopress 17-2 Tool. Splices are always tight and strong. Tool and sleeves are made by the NATIONAL TELEPHONE SUPPLY CO.



You'll Find Soldering is Easy . . . workmanship neater with famous Vulcan Soldering Irons. Available in five sizes—either plug or screw tip. The high-powered heating element assures even proper heat and long satisfying service. Made by VULCAN ELECTRIC COMPANY.



Outstanding Battery Performance is yours when you choose Gould Planté Batteries. Thick, grooved, pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC. A leader in their field. They're the finest money can buy.

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CHANCE 8-WAY EXPANDING ANCHORS

Save time and cost on telephone line guying

Chance 8-way Expanding Anchors are the first choice of many users in the telephone industry. Reason? . . . They give more holding power for less money!

Chance 8-ways expand quickly—there are no bolts to cut—the holding wires shear with a single blow of the expanding bar. There is no wasted area . . . the weight of the load is carried by eight blades instead of only two or four.

P. S. The six-inch 8-way is especially good for rural line guying. Only one size need be stocked . . . it fits both ½″ and ⅝″ rods. It fits in a six inch hole and expands to 70 square inches.

C52-3

A·B·CHANCE CO·
CENTRALIA, MISSOURI
SAN FRANCISCO, CALIFORNIA

TIDBITS

IN GUATEMALA, a well-meaning lady recently deposited a nickel in a box and pulled a lever. It took eight engine company trucks, two hook-and-ladder trucks, a rescue squad and a battalion fire chief about 90 seconds to arrive. The firemen, with heroic attempts at interpreting Spanish, finally directed her to a public telephone booth in a nearby drugstore.

IN DALLAS, TEXAS, a subscriber asked the business office supervisor if he could have number HA-1899. "That's the year I was born," he explained. She told him the number was working. Undaunted, the man returned a few days later and asked if he could have HA-7747. He explained that this spelled "Harris" on the dial. "That", he added significantly, "was my mother's third husband's name."

IN OKLAHOMA CITY a service representative got a request from a customer who wanted a cord long enough to extend from her home to her place of business—six blocks away.

IN FORTH WORTH, TEXAS, this note was typed on a service order of a customer who was getting an extension telephone: "Last installer too fat to get under the house, please send a skinny one next time".

IN CRETE, NEB., a newspaper ran a story about the telephone customer who received a phone call from an alleged repairman. He urged her to plug the mouthpiece and receiver on her telephone to avoid getting dust in the house because they were going to "blow out the line".

IN OKLAHOMA CITY, when a final bill reached a customer with the notation "FBI" she rushed to the business office in alarm. The public office representative quieted her and explained that it didn't mean "Federal Bureau of Investigation", but rather "flat-rate business one-party service". The customer said in relief, "I saw that FBI there and thought you'd turned my case over to them."

IN SAN ANTONIO, TEX., a five-year-old televiewer knew something had to be done when he saw a desperado creeping up on his favorite TV cowboy hero. The youngster ran to the closet, hauled out his father's .22-caliber rifle and opened fire on the villain. The accurate shot stopped not only the desperado, but everyone else scheduled to appear on the receiver.

IN CLEVELAND a subscriber asked, "What is the rate to Atlanta, Ga., please?"

After the operator quoted the lowest rates as $1.30 on week days and 90 cents on nights and Sundays the customer's reply seemed a bit out of the ordinary.

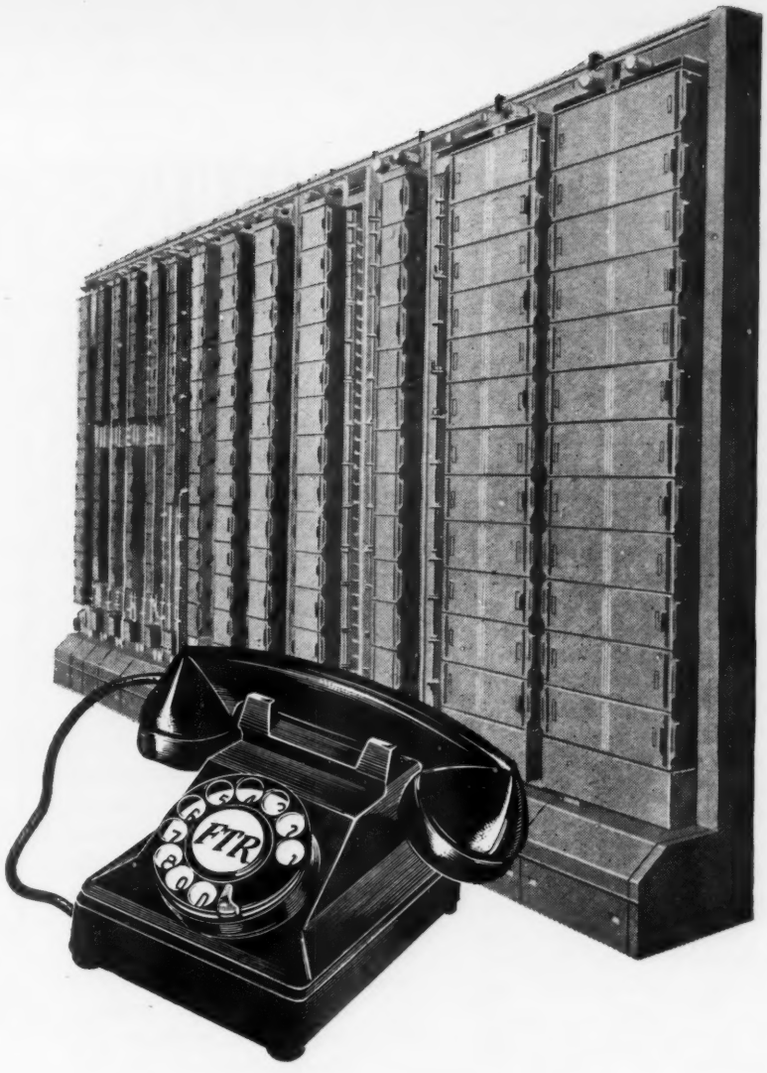
"You could knock me over with a pin," the subscriber exclaimed. "I surely thought it was a lot more than that!"

Curious, the operator questioned her and the reason for the surprise was revealed.

Said the lady:

"I'm going a long distance. Isn't this where you get the long distance bus fares?"

IN JACKSONVILLE, ARK., a customer called long distance recently and told the operator, "This is an emergency call. I want to get a divorce."

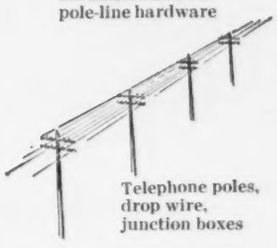


Microwave radio relay systems

Switchboards, test-boards

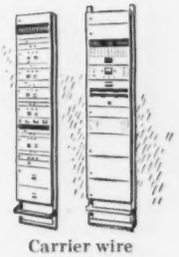
Insulators and all pole-line hardware

Telephone batteries and standby power supplies

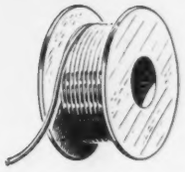


Telephone poles, drop wire, junction boxes

Teleprinters



Carrier wire transmission systems



Wire and cable for every purpose

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Modern automatic dial telephone exchanges—for communities of any size from the largest to the smallest—are provided complete to the last detail by ISE. But ISE service goes far beyond that—covering every conceivable need of a modern communications system. Included are such specialized equipment as microwave point-to-point links, carrier and other multiplex systems and teleprinter networks—as well as the telephone wire itself, the poles on which it is strung and all the tools, accessories and materials required. Look to ISE for everything—everything behind your telephone.

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With Ease and Safety

BASHLIN'S

New Shifting Tool Dee Safety Belt

Next to Safety in the experienced lineman's book, Accessibility of Tools is of first importance in selecting a Safety Belt. This new Bashlin Safety Belt is designed with sliding tool loops . . . keeps tools within easy reach. And the built-in extra safety factor saves the Safety Strap from wear. It's Safe . . . Practical . . . Comfortable . . . and you *know* it's right. It's Bashlin.

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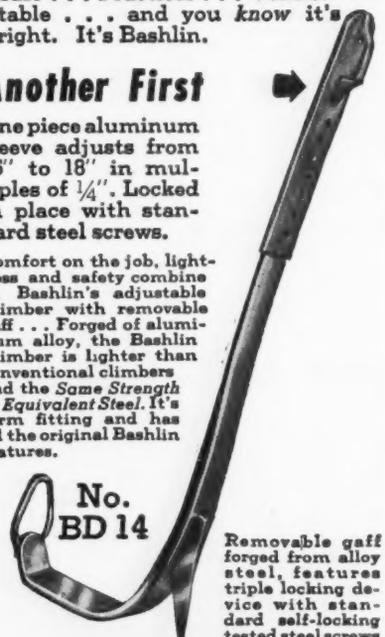
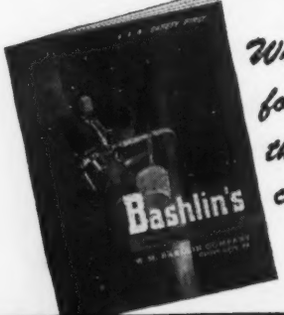
One piece aluminum sleeve adjusts from 15" to 18" in multiples of ¼". Locked in place with standard steel screws.

Comfort on the job, lightness and safety combine in Bashlin's adjustable Climber with removable gaff . . . Forged of aluminum alloy, the Bashlin Climber is lighter than conventional climbers and the *Same Strength as Equivalent Steel.* It's form fitting and has all the original Bashlin features.



No. BD 14

Removable gaff forged from alloy steel, features triple locking device with standard self-locking tested steel screws



Write for this catalog

W.M. BASHLIN COMPANY

GROVE CITY 1, PA.

"QUOTES"

"It is time that the line should be drawn between Americans who believe in individual liberty and those who believe in human slavery; those who believe in freedom and those who believe in governmental controls, those who follow the precepts of the Founding Fathers and those whose eyes turn towards Moscow." —*Somerset, (Penna.) Daily American.*

• • •

"We will have taken just about the last step to socialism, when we turn the schools over to the Federal government. The first appropriations might be with a few strings, but gradually the powers at Washington would take over, telling the schools what to teach, how much to pay, where to build schools." — *(Waurika (Okla.) News-Democrat.)*

• • •

"Had Congress refused to go along with presidential requests for more power . . .; had Congress held a tight rein on governmental expenditures; had Congress been more careful about approving presidential appointees, this nation would never have slipped as far along the road to socialism as it has." — *(Italy (Texas) News-Herald.)*

• • •

"New Zealand socialists, now out of office, find themselves hard pressed to present a program with sufficient appeal to the voters to return them to power, according to Albert E. Norman, Australian news chief of the Christian Science Monitor. One reason why New Zealanders are getting fed up is that the bills have come in. They already are paying $280 per head for every man, woman and child in the country, the highest figure in national history."—*Antigo (Wisc.) Daily Journal.*

• • •

"If there is any statement which burns this writer to a sizzling point, it is one used so many times by officials who wish to pass off huge expenditures with the glib explanation: 'Oh, well, it doesn't cost us anything; the government pays most of it.' I don't care if it is a bridge, a false moustache, a recreation park or a monument to the flea that bit the dog that bit the burglar —nothing we get costs quite so much as that which is bought with 'government funds.' "—*St. John (Kan.) News.*

"He told me he spends a million dollars a day—and then I find out he's only a Government clerk!"

STRANDLINK and STRANDVISE

available in three (3) sizes— for all grades of strand

Field performance over two years now confirms original test claims for this Reliable method of splicing and dead-ending steel strand messenger, static and guy wires.

STRANDLINK

STRANDVISE

ASK FOR

1. Detailed Test Reports
2. Actual Sample For Examination
3. Prices — without obligation

Yes

- ✓ "Installed Costs" go down as guys go up fast, safe and sure. The feed-thru Strandvise, at anchor eye, permits all degrees of tension. Slack guys are tightened in "no time".
- ✓ The greater the load, the tighter they hold. Gripping jaws do not damage the zinc coating of the strand. The Preece Test supports this claim.
- ✓ Shaking and vibrating of even a slack guy does not loosen the grip of the jaws if there was real original tension.

and

Easy speed makes a splice or dead-end with this Reliable method. Most cable spinning machines pass the Strandlink with ease. Some require only that traction rollers be opened.

For ¼", 5/16" and ⅜" strand.

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Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.

OVER 45 YEARS SERVICE TO THE TELEPHONE INDUSTRY

COSTS 1/3 LESS THAN METAL GUARDS—AND NO MAINTENANCE PROBLEM

FLEXIBAL Guy Guards — in standard lengths — provide the flexibility that gives with the blow and cushions the impact. Aluminum-painted, they offer both day and night visibility. No other type of guard is so easy to handle, so simple to install — none so effectively cut down losses — never gets out of commission.

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Write for Free Sample and Prices

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S. E. OVERTON COMPANY

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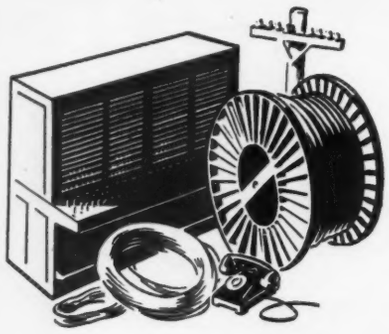


NEW IDEAS AT WORK

• •

COLOR DOES IT . . . Here's a tip from Canada that may pep up your pay station revenues. Canadian Bell is painting its outdoor telephone booths in all the colors of the rainbow. They say it makes it easier for the passer-by to spot his spur-of-the-moment telephone call.

• • •

"PAY STATION PSYCHOLOGY" . . . To learn how coin telephones can best serve the public Ohio Bell pay station representatives have had to become students of human nature. They don't just see a vacant wall space and urge a shop keeper to have a coin telephone installed there. For instance they know that we prefer not to walk up or down stairs to reach a public telephone or to squeeze behind a counter to enter a booth. If there are three booths in a row we are more likely to use the telephones in the two end booths. Perhaps we feel they are more private. Why we do these and other things our pay station representatives don't always know. But they know we do them from studies they have made of collections from pay telephones in different locations.

With more than 125 million coins dropped each year in coin telephones in Ohio Bell territory and 90% of those nickels, the company has a pretty good idea of the number of people using these telephones. Impressions people have of the convenience, comfort and attractiveness of the pay stations are impressions they have of the company. Lately pay station people have done a lot towards improving pay stations already operating. That means everything from washing them to building a booth around an open telephone and of course keeping them in good working order. In one area alone, a study shows that the refurbished booths brought an increase in revenue of 6.1% over those not redone.

• • •

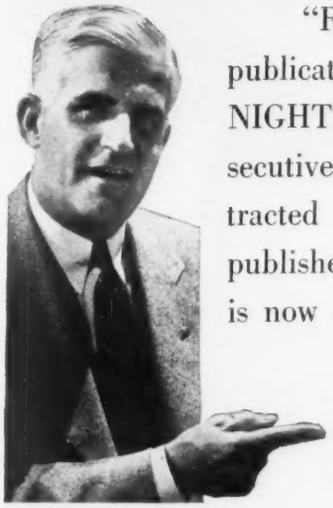
THE NATION'S DEFENSE . . . A great amount and wide variety of telephone services contribute essentially to this nation's defense. Fast two-way voice communication is essential to industry and industrial use of the telephone has steadily increased all through the organization and expansion of the defense production program.

New systems have been developed to spread air-raid warnings more quickly than in World War II. Private line networks have been installed for the Air Force to speed such warnings from regional control centers to key cities. To transmit the alerts from these key points to police and fire departments, Civil Defense units, hospitals, key industries and others, an entirely new system has been designed by Bell System engineers and is being produced by the Western Electric Co. This will enable the key point to "dial the color" of the alert—Yellow, Red or White. At all points to be warned the degree of alert is simultaneously indicated by colored lamps and a bell that rings a corresponding signal.

With these arrangements it will be possible to alert the entire United States in less than two minutes.

This Book Should Be at Your Finger Tips!

Rebuilding The Rural Outside Plant.. by John S. Reed



"Rebuilding The Rural Outside Plant" was authored for exclusive publication in TELEPHONE ENGINEER & MANAGEMENT and FORTNIGHTLY TELEPHONE ENGINEER. It was presented in fourteen consecutive installments and while appearing in the magazines the series attracted a great deal of favorable comment and many requests for it to be published as a book were received. As a result of these requests the series is now available in book form.

Easy to understand — Profusely illustrated

If you are faced with restoring a run down plant regardless of whether dial, common battery or magneto service is to be rendered to the subscribers you will find the answers to most of the problems that will be encountered in Mr. Reed's book. He shows the reader how to inspect the plant to determine the work to be done, what materials and equipment might be needed and then takes one through the complete rebuilding or restoring inside and outside plant to good condition step-by-step.

In securing this book for yourself or for your men you are not "buying a pig in a poke" . . . you are not guessing at the value of its contents. It has already been published in TELEPHONE ENGINEER & MANAGEMENT and FORTNIGHTLY TELEPHONE ENGINEER and telephone men throughout the country placed their stamp of approval on it by rushing orders totaling several hundred copies immediately after our announcement that the book was available.

Rebuilding The Rural Outside Plant
By John S. Reed
In this book Mr. Reed creates a mythical small company faced with the task of rebuilding its rural plant. After creating the company and explaining its problems, Mr. Reed takes the job from the inspection to determine necessary work, through actual construction of the plant. Every phase of the work from setting the poles and stringing of wire through installation of subscribers' station equipment is carefully explained and illustrated by photographs and drawings.

TELEPHONE ENGINEER Publishing Corporation
7720 Sheridan Road, Chicago 26, Illinois _____ 1952

Gentlemen: I am enclosing check for $_____ covering _____ copies of "REBUILDING THE RURAL OUTSIDE PLANT" at $1.50 per copy. Please ship same to

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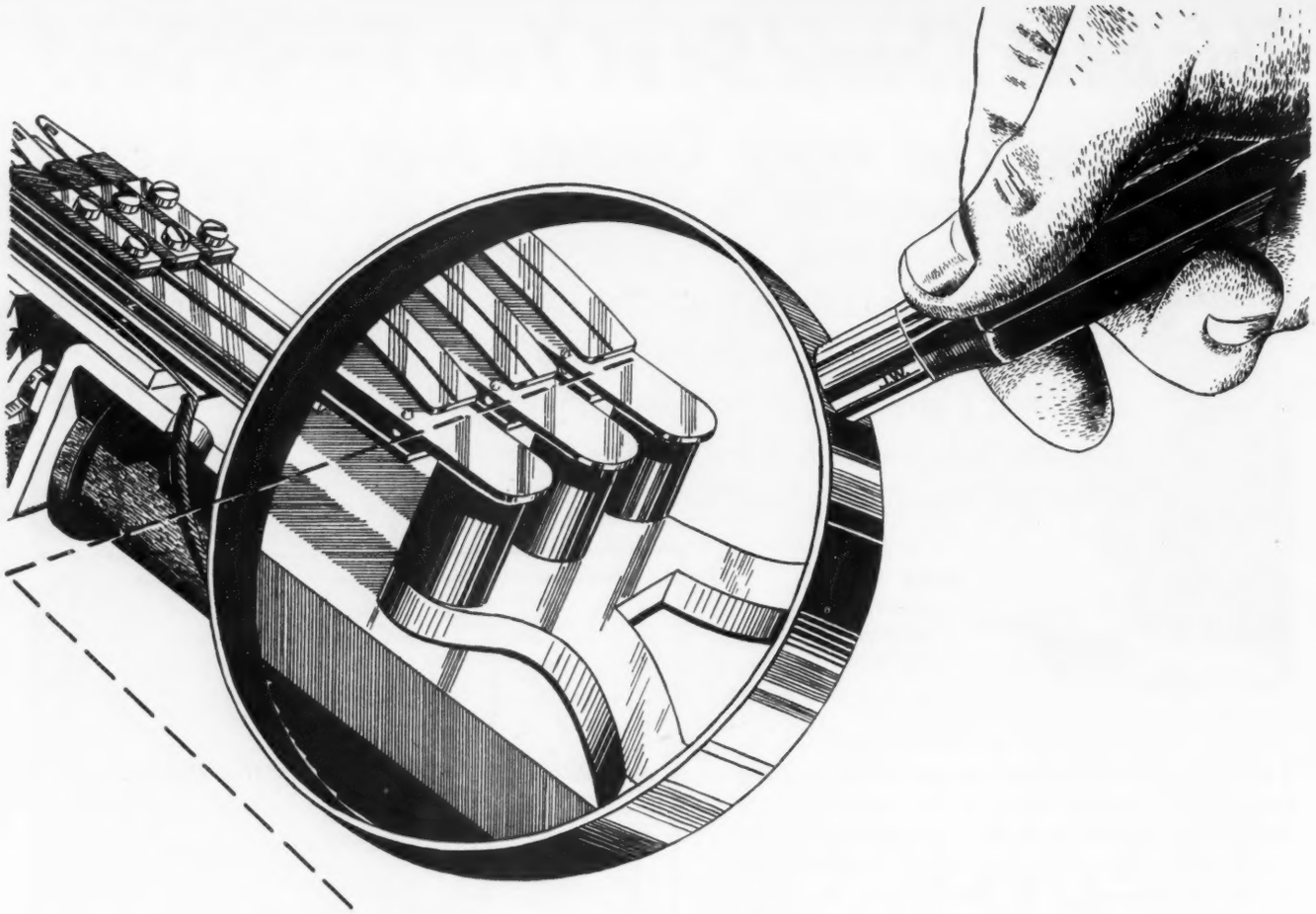

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A costly formula in modern telephony is . . .

MOTION × WEAR = WASTE in maintenance, repairs and lost revenue. A single mechanical failure on this call, another on that call, multiply into a system that will not carry the potential traffic on which your earnings are based.

That is why motion is reduced to a practical minimum in North systems where switching is entirely by relays. The simple contact action shown above, represents the maximum motion required on any North telephone relay. The wear involved is so minute it cannot be expressed in measurements, although one such armature motion may relay a dozen circuits simultaneously.

SEE IT IN OPERATION FOR PROOF

Add all of the action required to find and connect a line in a North system and you still have an insignificant total possible wear factor. That's one reason why every signal set in motion in a North system *always* carries through to complete a revenue earning call instead of a cost-building service call. It will pay *you* to get the full facts about

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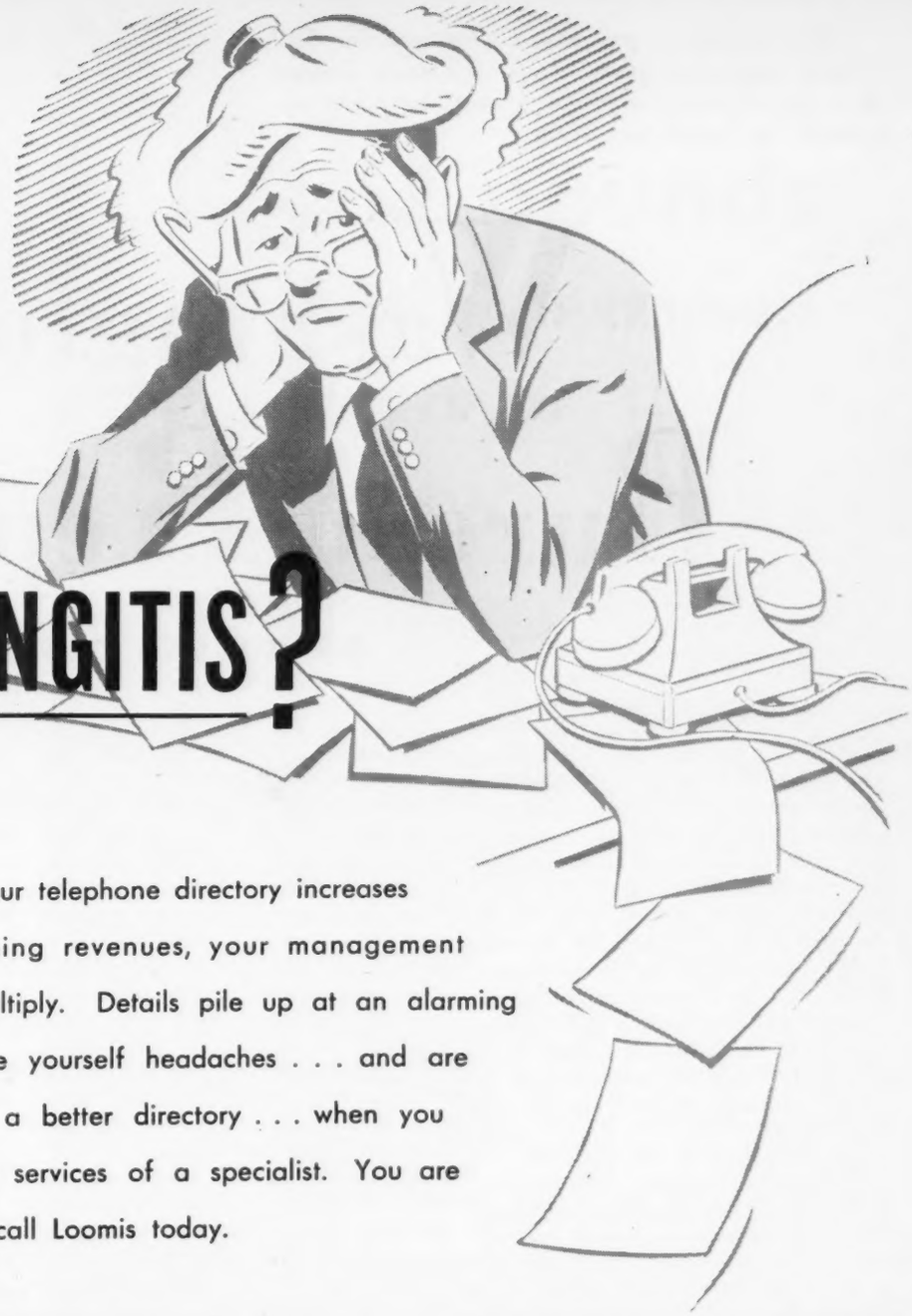

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CWA opposes proposed changes in Bell System pension plan . . . Western Union agreement with employees may be right approach to wage problem.

Washington Bureau Reports

By ROLAND DAVIES and FRED HENCK

IN WHAT IS shaping up as something of a general drive by unions, as a result of increases in Social Security benefits and the long-term nature of most employer-paid pension plans, the Bell System is apparently being used as a test case.

The Communications Workers of America (CIO), joined by several independent unions in the telephone field, is opposing pension plan changes proposed by the Bell System companies, and has embarked on a program of suggested revisions which would eliminate entirely the deduction of half of Social Security payments from Bell System pensions.

Although the Bell System plan differs in several important respects from the pension setups in several major industries, particularly the recently-instituted ones, there seems to be a definite tie-in between the telephone union's efforts and those of other unions, particularly CIO groups.

Generally speaking, one-half of the Social Security benefit to a pensioner is deducted from his pension, on the basis that the company paid half of the tax which preceded the Social Security benefit while the pensioner was still an active employee. The Bell companies, however, have in effect a $100 monthly pension minimum, including Social Security.

With added federal payments taking effect Sept. 1, a number of Bell System companies have proposed in discussions with the unions that the deduction not be applied to the amount of the increase. Incidentally, a point of major difference between the Bell System plan and those in many other industries is that the latter are included in employee-employer agreements. The Bell System plan, instituted many years ago and entirely non-contributory, is not.

CWA and the independent unions have banded into a joint pension bargaining committee with the following objectives: incorporation of the pension plan into union-company working agreements; discontinuance of all deductions from computed pensions, and a $100 pension minimum without deductions; joint union-management representation on benefit committees; establishment of broader retirement rights; elimination of compulsory retirement at age 65, if the worker is able and willing to continue on the job; utilization of the five consecutive years in which wages were highest as the basis for computing pensions; and computation of pensions at 1½% of the average annual wage, instead of the present 1%.

Some of the other industrial pension plans provide for a pension minimum composed of the entire Social Security benefit plus an employer payment of enough to make up the difference. Under those arrangements, most of which have several years to run on the basis of existing contracts, the employer's contribution goes down as the Social Security benefit rises.

Thus the outcome of the current Bell System discussions will be watched carefully from outside as well as inside the telephone industry.

BUT WHEN IT COMES TO REDUCING THE NUMBER—

"No Decision" Contest

A SITUATION felt in many quarters to be the logical outgrowth of continued inflation and existing regulatory practices has wound up, for every one but the directly-concerned Western Union Telegraph Co. and its employees, as a "no decision" contest.

Western Union, it will be recalled, came to a strike-ending agreement with the union representing most of its employees to the effect that stipulated wage increases would be put into effect if and when the Federal Communications Commission approved rate boosts to cover the increased costs.

Observers immediately pointed out that, as long as regulatory commissions do not provide for a "future look" in rate cases, and as long as costs, prices, investment, and everything else keeps going up, the telegraph agreement might be about the only approach which eventually may be made to inflation without bankrupting a lot of regulated public util-

ities, seriously impairing service, or creating considerable labor unrest.

The FCC, however, did not relish the idea of having to decide such a testcase. Its staff members, after a search of all available records, pointed out that they could not find a single instance where a regulatory commission has granted a rate increase on the basis of contingent wage increases not to take effect until the rate revisions had been approved.

Ultimately, since it still was bargaining with the union on contract revisions—the strike-ending settlement was a statement of general agreement, and did not include all the details—Western Union agreed to make the wage and other contract changes definitely effective Sept. 1,

My Neighbors

By BILL PAULSON

"If the tax collectors have left any blood in me...you're sure welcome to it!"

regardless of FCC action on rates. Commission approval of the higher rates followed soon thereafter.

There is one other matter concerning Western Union of more than slight interest to the telephone industry. Thanks to the action of Congress last year in trimming the domestic telegraph excise from 25% to 15%, the cost of sending a telegram at the new rates is roughly the same as it was under the former schedule with a 25% excise.

With a new administration coming in, widespread changes in the House and Senate lineups expected, and the possibility of tax revisions strong, the telephone industry will have a new opportunity to present its case as the most heavily-taxed field other than distilling and tobacco, and far and away the most heavily-burdened of essential services.

Since continued rate increases are a necessity, reduction of excises offers a promising chance for added revenues to telephone companies without increasing subscribers' total costs. It's

(*Please turn to page* 28)

1500 pounds

MINIMUM COMPRESSION RESISTANCE OF

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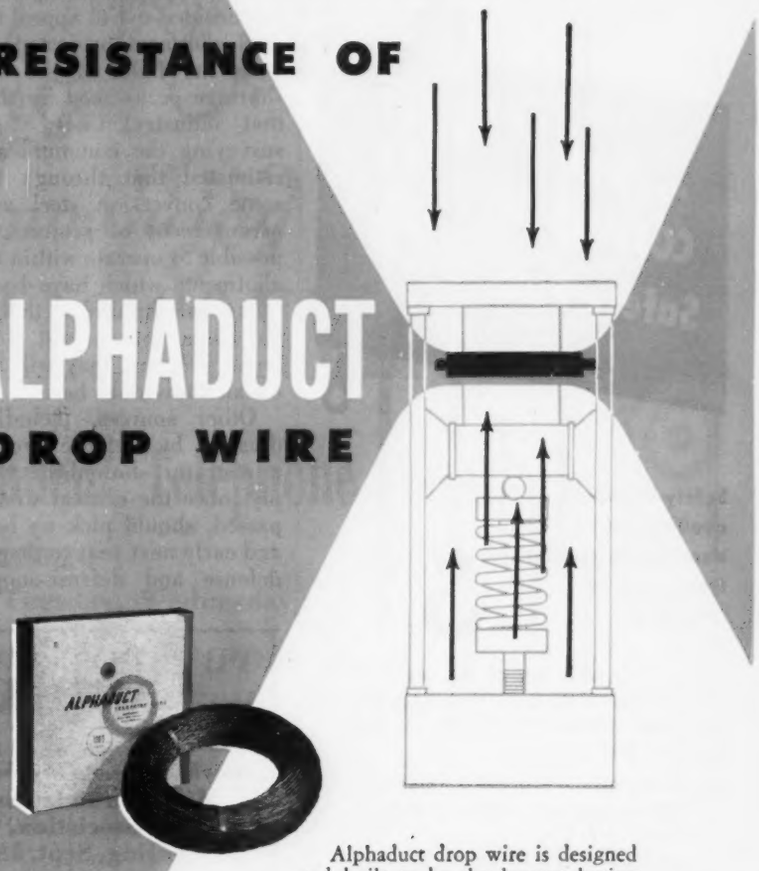
DROP WIRE



Alphaduct drop wire is designed and built to be the longest lasting drop wire you've ever installed. It's tested . . . completely, thoroughly and often to make sure that every single coil is up to Alphaduct's rigid standards.

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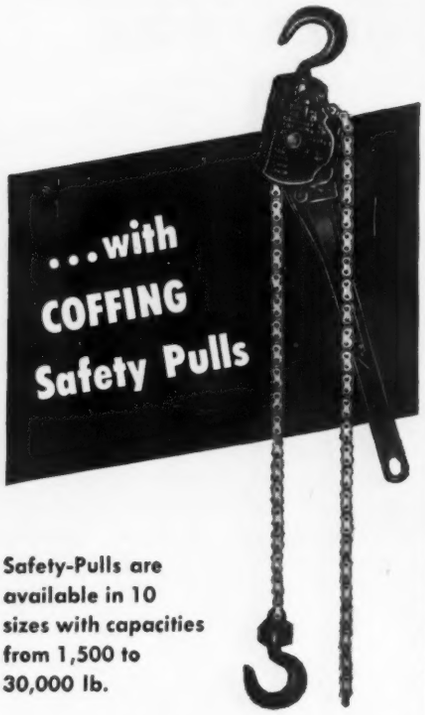

Safety-Pulls are available in 10 sizes with capacities from 1,500 to 30,000 lb.

Here are just a few of the "extras" that keep Coffing Safety-Pull Ratchet Lever Hoists on the job — and save on maintenance costs.

- Hoist frame is certified malleable iron — your guarantee of lasting durability.
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- Hooks are drop-forged, heat-treated alloy steel — will not break or straighten out.
- "Safety Valve" handle will bend before hoist is overloaded beyond maximum safe limits.
- All Safety-Pulls are factory-tested at twice their rated capacity.

Find out more about the hoists that stay on the job — and out of the repair shop. Write Dept. U9SP.

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a chance which appears well worth the uphill struggle required to make it a reality.

Controlled Materials

ADVISED OF the government mobilization agency staff recommendations for first quarter allotments of steel, copper, and aluminum under the controlled materials plan, the National Production Authority's Communications Equipment Division has decided not to appeal the reduced steel allotment projected.

In the light of the severe steel shortage occasioned by the strike in that industry, CED officials, after surveying the communications field, estimated that through the use of some conversion steel and the rearrangement of projects, it will be possible to operate within the reduced allotments which have been made.

It was emphasized that if individual cases with urgent steel requirements crop up, they will be appealed on an individual basis.

Other sources, including an indication by Defense Production Administrator, showed that the steel supply, once the critical first quarter is passed, should pick up between now and early next year to the point where defense and defense-supporting industries should, by the second quarter of 1953, be back to the same steel position they were before the nationwide strike.

Thus, if the communications industry, by the use of conversion steel and the leveling off of projects over the remainder of 1952 and the first quarter of 1953, is able to maintain a steady construction pace until next year's second quarter, the situation should be well on the way to solution.

Available information was that the communications operating and manufacturing industry will be able to get along on the copper and aluminum allocations for the first three months of 1953. The NPA communications division, it is understood, does not plan to appeal the copper and aluminum recommendations.

Comments by Mr. Fowler about the easing of the materials picture again gave rise to speculation that the controlled materials plan may not be necessary much longer. Next July 1 has been given as the earliest date for decontrol by the DPA Administrator since the end of the steel walkout. Other observers pointed out, however, that the materials situation has appeared to be easing in the past, but that something, like a cop-

(*Please turn to page* 30)

Coming Conventions

"There has never been a time . . . when it was more necessary for telephone people to take common counsel upon common problems."

Michigan Independent Telephone Association, Olds Hotel, Lansing, Sept. 19.

Arkansas Telephone Association, Arlington Hotel, Hot Springs, Sept. 15 and 16.

Tennessee Telephone Association, Hotel Hermitage, Nashville, Sept. 17 and 18

Rocky Mountain Telephone Association, Newhouse Hotel, Salt Lake City, Utah, Sept. 18 and 19.

United States Independent Telephone Association (annual convention), Conrad Hilton Hotel (formerly the Stevens), Chicago, Oct. 13, 14 and 15.

North Carolina Independent Telephone Association, Carolina Hotel, Pinehurst, Oct. 23 and 24.

Georgia Telephone Association, Henry Grady Hotel, Atlanta, Oct. 27 and 28.

South Carolina Independent Telephone Association, Clemson House, Clemson, Oct. 30 and 31.

Virginia Independent Telephone Association, Roanoke Hotel, Roanoke, Nov. 6 and 7.

Alabama-Mississippi Independent Telephone Association, Jefferson Davis Hotel, Montgomery, Ala., Nov. 10 and 11.

Florida Telephone Association, Orange Court Hotel, Orlando, Nov. 13 and 14.

South Dakota Telephone Association, Cataract Hotel, Sioux Falls, Nov. 13 and 14.

Oklahoma Telephone Association, Tulsa Hotel, Tulsa, Nov. 20 and 21.

"There is no quick, easy way to the acquisition of knowledge . . . but at a convention there will be ready-made answers to perplexing problems."

Announcing

55th ANNUAL CONVENTION

of the

United States Independent Telephone Association

Conrad Hilton Hotel—Chicago **October 13-14-15**

(Monday, Tuesday, Wednesday)

A MEETING OF VITAL IMPORTANCE
FOR ALL INDEPENDENT TELEPHONE PEOPLE

CONFERENCES
Plant-Traffic-Commercial-Accounting
Answers to Tomorrow's Questions

GENERAL SESSIONS
Topics of Outstanding Importance
Dynamic — Entertaining Speakers

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ALL INDEPENDENT OPERATING TELEPHONE PEOPLE ARE CORDIALLY INVITED TO ATTEND WHETHER OR NOT THEIR COMPANIES ARE MEMBERS OF THE ASSOCIATION.
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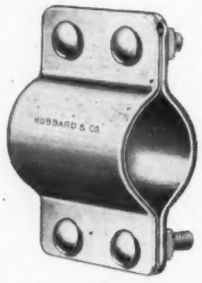
HANG THE LOAD ON HUBBARD HARDWARE

HUBBARD GRADE CLAMPS

Hot Galvanized

No. 8984
PRESSED STEEL CLAMP



No. 8989
FORGED STEEL CLAMP

A problem often encountered in telephone construction is the "creeping" of cables which are run on grades. A convenient method of preventing this is the use of Hubbard Grade Clamps. These clamps are designed to grip both the messenger and cable securely and yet not harm the relatively soft cable sheath. The efficiency of this design is such that Hubbard Grade Clamps permanently maintain both messenger and cable in the same relative position, and eliminate "creeping."

Pressed Steel Clamps are 12-inches long by 7⅛-inches wide and are furnished with stove bolts. Drop Forged Clamps are furnished with four ½-inch oval neck clamp bolts. Sizes available for all standard messengers and cables.

HUBBARD HARDWARE FOR THE TELEPHONE LINE

OVERHEAD

Cable Suspension Material—Wireholders
Pole Seats and Balconies—Clevises
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UNDERGROUND

Cable Racks—Manhole Ladders and Steps
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"Hang the Load on Hubbard Hardware!"

per or steel strike, always comes along to upset the picture.

Cut-Overs of REA Financed Facilities

WHILE THE Rural Electrification Administration continues issuing new telephone loan allocations at a fairly rapid pace, there now appears to be some activity at the other end of the federal farm telephone line—actual cutovers of REA-financed phone facilities into service.

The agency now anticipates a total of 19 cutovers in the September-December period. Some already have been made, or are scheduled in the near future.

Among REA-financed farm telephone systems in service are those of the Farmers Mutual Telephone Co., Shellsburg, and the Griswold Cooperative Telephone Co., both in Iowa, and the Williston (S.C.) Telephone Co. Scheduled for early October are cutovers by the Florala (Ala.) Telephone Co., recipient of REA's first farm telephone loan allocation nearly two years ago, and the Eastern Rowan Telephone Co., Granite Quarry, N. C.

Your Vote

WHAT'S THE use of bothering? My one little vote won't matter, anyway."

How many times have we said that, and believing our own lame excuse for civic laziness, neglected to go to the polls in a local, state, or national election?

But, one little vote does count. One vote, more or less, sometimes has changed American history.

It was one single vote that gave statehood to California, Idaho, Oregon, Texas, and Washington.

By one single vote in the House of Representatives, the Selective Service Act of World War II was passed.

Thomas Jefferson, John Quincy Adams, and Rutherford B. Hayes were elected president of the United States by the margin of one electoral vote.

Vote according to your own personal beliefs and your conscience, but be sure to vote—it is indeed a privilege to cherish, and your civic responsibility.—*Selected.*

Editorial

Good Plants–Good Service–Good Rates!

WE MAKE NO apology for using, again, the foregoing title for an editorial.

We use it because we think those six words, in that order, constitute a prescription for success in the telephone business. That being the case, we do not believe they can be written or spoken too often.

During the years we have been holding forth on this particular subject in these editorials, we have seen many changes take place in the telephone business.

We have seen the costs and operating expenses of the business rise so high that many telephone companies would have gone bankrupt without higher exchange rates.

And we have also seen cases where the greatest deterrent to higher rates was the kind and quality of service being supplied by the company.

Some regulatory commissions now consider the quality and adequacy of the service supplied as an important factor in the determination of the rates allowed.

A representative of one important commission put it this way recently: "The Commission has decided—and this is a new step—that there must be a definite relationship between rates and service. The two cannot be separated."

But even regardless of the attitude of commissions on the matter of the relationship of rates and service, the public simply will not pay good rates for poor service.

So, in order to obtain good rates—which means rates adequate to carry all expense and leave a fair return for capital—the service must be good.

And, to have good service, the plant must be good.

We have seen, too, during this period, authorization given the Rural Electrification Administration to lend government money for telephone purposes. And we have seen REA, in lending money to either commercial telephone companies or telephone co-ops, specify high-quality construction and modern buildings, plant layout and equipment.

REA-financed exchanges will be almost entirely dial exchanges.

REA requires professional engineering services for planning and laying out plants to be built or rebuilt. A correspondent who has given us considerable information about this phase of REA specifications, says that such engineering services "are expensive, but worth the cost."

There is in fact nothing new about this proposition. A number of Independent telephone companies have for years employed professional engineering services for plant layouts, just as they employ architects to plan buildings.

To continuously supply good telephone service, the plant must be good—well built and well maintained.

That is the foundation for good service, just as good service is the foundation for good rates.

And just, it should be added, as good rates are the foundation for success and prosperity in the telephone business.

A telephone friend of ours, the manager of a very successful Independent company, said to us the other day: "I have been thinking that perhaps many of us in the telephone business do not ourselves appreciate the great vitality of the business."

"We have the fear sometimes," he said, "that people will not pay enough for telephone service to support good, modern plants. But case after case has shown that they will—if they really do get good service".

Our friend told the story in a very few words.

The recipe for success and prosperity in the telephone business can, we think, be stated very simply:

Good Plants—Good Service—Good Rates!

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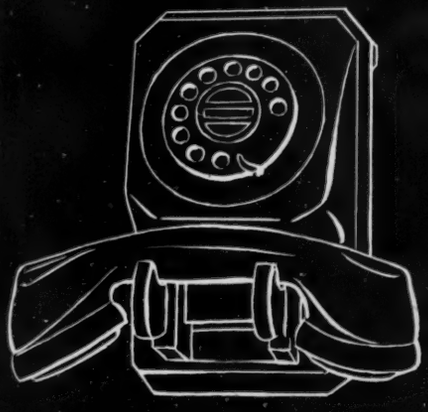
The new Stromberg-Carlson 1400 series telephone is available in 7 different models to meet any operating company's requirements now or in the future.

When you consider that this telephone is quickly interchangeable from desk to wall-mounting, "hard-headed" buyers will immediately see its economies. Furthermore, its design is the most modern in the independent industry and its proven superiority of operation has already gained industry-wide acceptance.

1443-A Desk Set with CE 211 dial showing numbers only plus "operator"

7 styles of the Stromberg-Carlson



Every style can quickly be converted to wall-mounting with a simple set of plungers.

1444 Two-piece Desk Set for use with new 1460 Bell Box

STROMBERG-CARLSON

Factory, General Offices: Rochester 3, New York. Branch Offices: Atlanta 3, Chicago 6, Kansas City 8, San Francisco 3. In Canada: Stromberg-Carlson Co. Ltd., Toronto

1443-A Desk Set with simple dial adapter which permits use of any standard dial

1443-A Desk Set with CE 212 dial, "Metropolitan type"

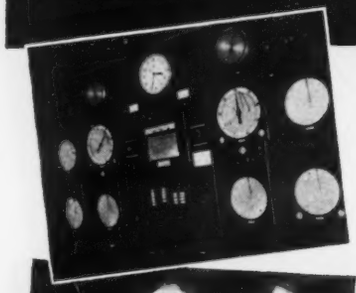
rlson 1400 Telephone

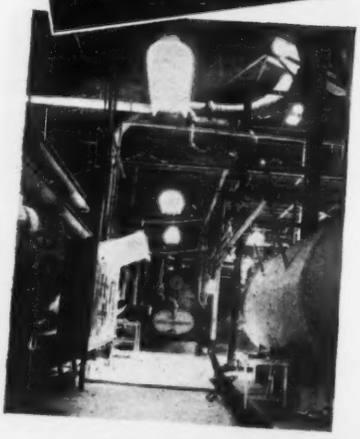
1443-A Desk Set with dial blank for common battery use

1443-A Desk Set with dial adapter using the standard CE 209 dial

1443-A Desk Set with dial adapter using the standard CE 208 dial

PRECISE CONTROLS ASSURE LONG LIFE TO TAYLOR-COLQUITT POLES



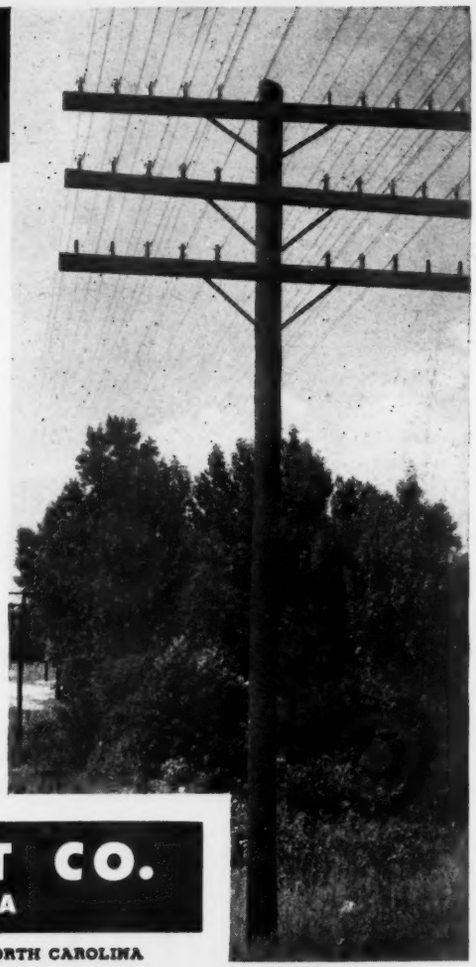


From the pine forests of the Southeast to the outbound loaded car, each step in Taylor-Colquitt pole production is subject to precise and accurate control.

These controls cover timber selection and pole manufacture as well as moisture removal and preservative treatment. Developed and refined during the 26 years that Taylor-Colquitt has been a producer of fine poles, they assure uniform high quality and consequent maximum life.

For poles in which nothing has been left to chance, specify Taylor-Colquitt treated pine.

Taylor-Colquitt poles are distributed to independent telephone companies exclusively by Automatic Electric Sales Corporation, 1033 West Van Buren Street, Chicago 7, Illinois.



TAYLOR-COLQUITT CO. TIMBER CONSERVATION T-C

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SPARTANBURG, SOUTH CAROLINA

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Lenz Cords Improve Service

CORDS SWITCHBOARD, OPERATORS, RECEIVER, DESKSTAND, HAND SET, TRANSMITTER.

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TRADE MARK

Good electrical transmission and consistent, trouble-free service are essential in communication and signal lines. You can depend on Copperweld* Line Wire to provide these advantages—vitally important in building customer good-will and in reducing operating costs.

Because its thick copper covering and strong steel core are inseparable, Copperweld Line Wire has the rust-resisting life of solid copper. It retains its original voice and high frequency transmission properties which are better than any other high-strength conductor.

Copperweld's permanent high strength assures greater safety for long spans, with the stamina to resist heavy ice and wind loads. Construction costs are reduced because fewer poles, accessories and man-hours are required.

When you build overhead lines, remember that Copperweld is the only wire that will give you the high conductance and long life of copper plus the rugged strength of steel. And, at the same time, you'll be saving substantial amounts of copper. Write us today for engineering assistance . . . there's no obligation.

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for safer long spans---

Copperweld Line Wire

TRADE MARK

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CABLE LAYOUT PLANN

Fig. 1—A new cable job is needed to replace objectionable open wire plant in town.

Fig. 2—Town and rural cable on jointly used poles presents a neat appearance.

IN RURAL COMMUNITIES (farms and small villages) where party lines are the rule and are generally much preferred by the subscribers, open wire lines are an economical means of providing circuits between the central office and the subscribers. In the case of larger towns, where crossarms would be required for the number of lines needed to serve the subscribers, serious difficulties would result in the way of insufficient clearances from trees, buildings, street lighting circuits, and power distribution wires (*Figures* 1 *to* 3). These lines would be difficult to maintain and would be extremely unsightly, particularly if more than one crossarm is required on each pole. The installation of cable plant is the only alternative to what might otherwise become a serious public relations problem.

Cable is limited to a definite number of pairs which cannot be added to in the manner that open wires are added to an existing aerial wire lead. Once the cable plant is installed, additional circuits cannot be placed without replacing the present cable with a larger sized one, or using additional cable, involving considerable expense and delay. For this reason cable plant must be very carefully designed to assure that a reasonable number of circuits will be available for new subscribers for a period of years. Furthermore the cable layout must be sufficiently flexible to enable circuit changes to be easily made for subscriber moves or additions.

Preliminary Map—Town Survey and House Count

THE FIRST step in planning the cable layout is to prepare a map of the town. This map may be traced from a standard town plat and should show the streets and alleys, railroads, and rivers. If possible the map should be made large enough to indicate the lot lines as this helps in counting the number of present and prospective subscribers.

The central office is located in this map at a point corresponding to the approximate wire center of the exchange. This means that the office is located to balance the number and length of the lines extending from the offices as nearly as possible. This is an important factor only in large towns where excessive loop lengths can cause transmission difficulties. Actually the more important factors are accessibility for commercial activities (a location which subscribers can easily reach for paying their bills), use of a storeroom, and provision of a

NNING AND RECORDING

By JOHN S. REED

garage for the motor vehicle equipment. These considerations usually result in an office location on a side street just off or not far from the main street of the town. In the average sized town, such a location naturally falls close to the wire center of the exchange.

The number of present subscribers is entered on the map as shown in *Figure* 4. The prospective subscribers are located by a house count and are entered on the map.

In addition to the present prospects, the number of new prospects resulting from population growth should also be taken into account. For the average sized town the rate of growth is generally slow and it is safe to provide about 25 percent more pairs than actually needed for existing subscribers and present prospective subscribers. This means an initial cable fill of around 75 per cent. This initial fill will also provide for replacement of occasional defective pairs that cannot be entirely avoided.

In larger towns, population growth tends to be more rapid, and, except where rivers, railroads, swamps, and similar obstructions restrict growth in their direction, it is not always possible to accurately predict the direction in which the town may expand. Such instances require careful study and the exercise of good judgement to determine the best method of providing the needed capacity to meet future service demands without creating a heavy investment in unproductive cable capacity. Cost studies should be made to determine if it is better ot provide the maximum cable size or to place cable with less capacity, sufficient to serve the area for a certain period of years and then place "relief" cables from the office when the fill of the original cable approaches its limit.

Gauges and Sizes of Cable

LEAD COVERED cable is available in a number of sizes and pairs as follows:

No. 19 Gauge	No. 22 Gauge	No. 24 Gauge	No. 26 Gauge
6-pr.	11-pr.	11-pr.	11-pr.
11	16	16	16
16	26	26	26
26	51	51	51
51	76	76	76
76	101	101	101
101	152	152	152
152	202	202	202
202	303	303	303
303	404	404	404
404	606	606	606
455	909	909	909
		1212	1212
		1515	1818
			2121

Fig. 3—Cable through trees can be adequately protected by wood molding where open wires would result in a serious clearance problem.

Cable characteristics are as follows:

Gauge No.	Maximum Resistance per mile (loop) Ohms	Maximum Capacitance in Microfarads per mile	Average Attenuation in Decibels per mile
19	92	0.9	1.26
22	184	0.9	1.79
24	290	0.9	2.14
26	470	0.85	2.67

Although No. 22 gauge cable has been standard for many years in independent telephone practice, No. 24 or even No. 26 gauge cable wil be found to be satisfactory and more economical for cable installations in the average sized exchange. With modern types of dial and common battery sets, good local transmission can be obtained on up to four miles of No. 24 gauge or three miles of No. 26 gauge cable.

No. 22 cable is now used in outlying areas of large towns where loop resistance becomes an important factor. No. 19 gauge cable is employed primarily for toll cable

and for long farm cable to open wire from the central office. Farm cable should not be over two miles long to avoid transmission difficulties. If larger cable must be installed, loading may be required. However, this can be determined only by a transmission study by a qualified engineer. The reason for this limitation is that farm open wire of average length has a good deal of resistance. No. 12 steel line wire has about 68 ohms per mile while 19 gauge cable has 92 ohms per mile. In addition, there is the a-c impedance of the cable due to its capacitance which increases the loss and is the reason for using loading coils to counteract the capacitive effects. There can be quite a bit of loss when a long farm open wire line connects to a long cable pair to the central office.

Although local transmission can be quite good on long cable leads in town, it may not be at all satisfactory when connection is made to a toll line. For this reason, the limiting factor in selecting the size and gauge of cable is not the quality of local transmission but the overall loss from the subscribers station to the toll center. Here again, transmission studies must be conducted to avoid unsatisfactory toll transmission. Large connecting companies can and will help smaller companies with this problem.

Determining Number of Pairs— Main Cable and Laterals

AFTER ALL present and prospective subscribers have been entered on the map, the total in each block is indicated by a number written on the block space on the map. These numbers will indicate how the subscribers load is distributed and thus guide in the selection of the tentative route of the main or feeder cables from the central office. There are also other factors that may influence the location of the cable route, such as the need to locate the cable underground all or part of the way in conformity with local ordinances of the town and possible reuse of the poles on the route of the original wire lead to the outskirts of the town. In this connection, it should be noted that the main cable from the central office to the town limits may contain circuits for toll and farm leads to go out on open wire. The toll circuits may be quadded (for phantom groups) and may be composed of larger diameter conductors than the exchange circuits.

When the route of the main cable lead has been decided upon, the next step is to locate the laterals to reach the subscribers in the blocks distant from the feeder cable. These are branch cables that generally run at

(*Please turn to page* 40)

Fig. 4—Use of town plat to make house count. Symbols "R" are for "residence", "B" for business, and "V" for vacant. Subscripts "1" indicates 1-party, "2"—2-party and "4"—4-party.

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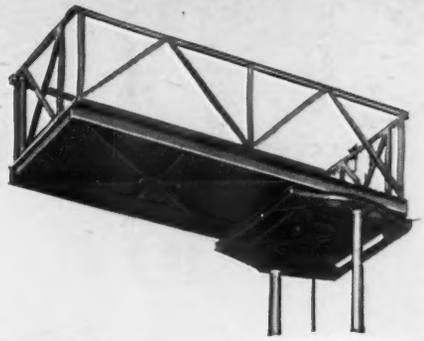

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HYDRAULIC TOWER

Platform extends to 30′ above ground and can be revolved full 360°. Operation is controlled from truck cab or by workman on platform. Models are also available in ground-to-platform heights of 21′ and 25′ for installation on chassis having a rated capacity of 1½ tons or more.

LINE CONSTRUCTION BODY (600)

Available in 9′ to 14′ lengths, equipped to meet individual needs in any phase of utility work.

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Models available in working heights of 23′ 6″, 26′ 6″, 30′ 6″, and 32′ 6″ for all styles of bodies.

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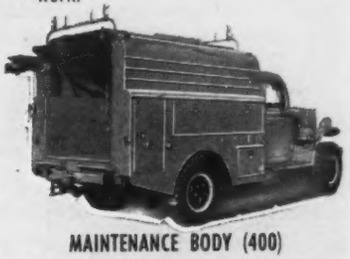

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Designed for medium duty general service. May be furnished with winch and derrick capable of handling 40′ poles.

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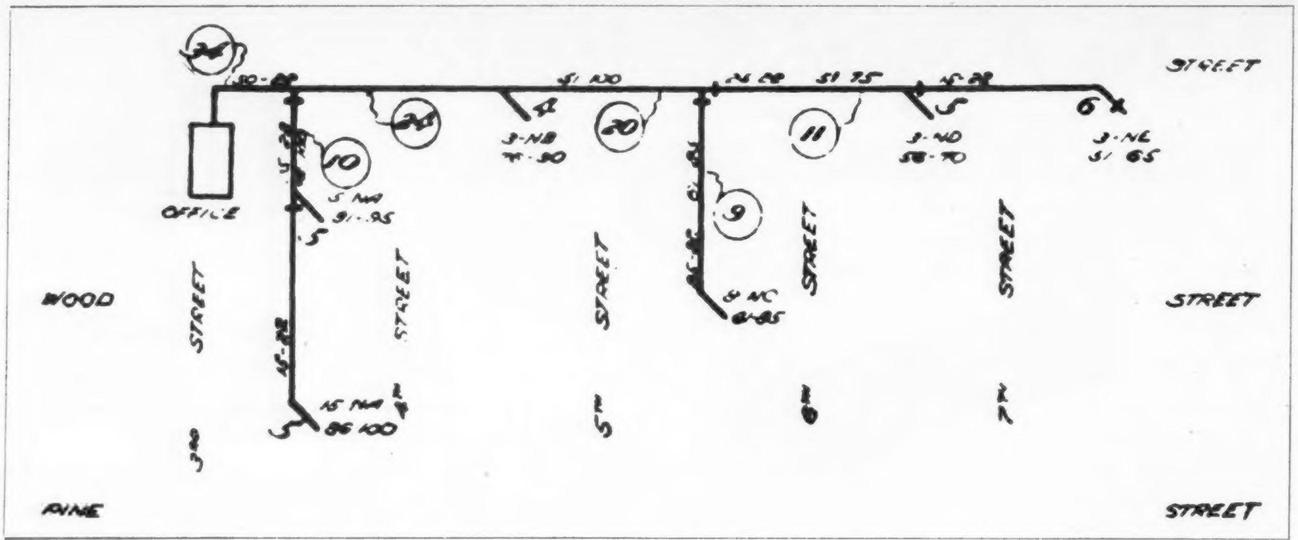


Fig. 5—Method of computing number of present and prospective subscribers to be served by a main cable and its laterals. The total number for each portion is shown encircled. The cable fill in this example is 34÷50×100 or 69%.

right angles to the main cable lead, usually in alleys and along property lines separating lots through the middle of the blocks. In the case of laterals approaching the town limits or sparsely settled areas, open wire extensions are often placed to connect the few subscribers in this area to the last terminal of the lateral.

The number of subscribers on each lateral is totalled and the sum is entered in a circle near the lateral drawn on the map. Starting at the end of the main cable and working back to the central office, picking up the circled figures, the total of present and prospective subscribers is obtained for the area to be served by the cable. This total is divided as to residence and business subscribers.

Where there is a large number of party line subscribers, the number of residential subscribers is multiplied by a factor equal to 0.67. The resulting weighted figure is close enough for estimating purposes and will keep the number of pairs for residential subscribers at a reasonable figure. No factor is applied to the number of business subscribers, since there are generally few in this group that will take party line service.

A preliminary total is obtained by adding together the number of subscribers, the weighted number of residential subscribers and the number of farm and toll lines. To this total is added the number of reserve pairs needed to provide adequate cable capacity for the desired period. This method is shown in *Figure* 5.

Locating Terminals

CABLE TERMINALS are used in the final connection of the cable pairs to drop and station wiring of the subscriber's residence or place of business. These terminals are located at selected points on the laterals, and, where required, on the feeder cable. In small towns, there will generally be one or two terminals in each block, depending on the subscriber density. Many companies have established the practice of mounting a terminal on each pole within the block, even though perhaps only two or three drops would feed out of each terminal. The purpose is to obtain better drop distribution and avoid pole-to-pole drop spans through trees and shrubbery in the alleys and along lot lines.

The size of cable terminals depends on the number of subscribers to be served from each. A general rule is to provide 16 pair terminals when eleven subscribers (ultimate) are to be served and 26-pair terminals for over this number. While 16-pair is a desirable minimum size, many of the larger companies are using 11-pair terminals in the ratio of about two or three 11-pair terminals to each 16-pair terminal and an occasional 26-pair terminal in a carefully engineered arrangement to assure reasonable flexibility of the cable system. Such an arrangement works best under the plan where the terminals are spaced closely together so that each pole in the block has a terminal in it. Six-pair terminals (*Figure* 6) are very useful on farm cable leads where it is desired to serve rural subscribers along the lead without having to run open wire parallel to the lead for this purpose.

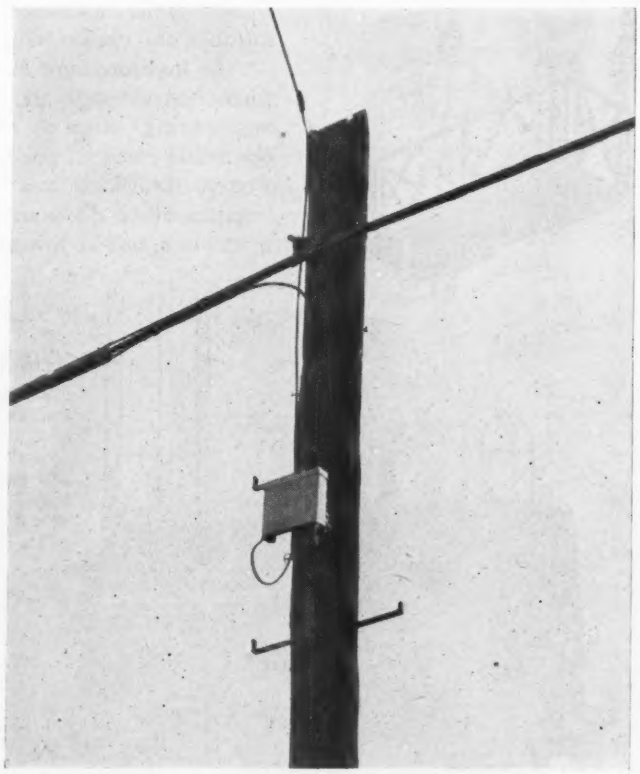


Fig. 6—Use of 6-pair terminal on farm cable lead.

(Please turn to page 65)

Maintenance Of Open Wire Lines

By MYRLE SHAFER

IT IS THE natural desire of progressive telephone companies to provide the best possible service to its subscribers. With the best and most modern central office facilities and the finest subscribers station apparatus, good service is not possible if the outside wire plant is in poor shape.

In cities and towns, most of the telephone circuits are in cable and is thus relatively well protected from service interruptions. Considering the large number of circuits that can be carried in cable, maintenance of this plant is a comparatively simple procedure; provided that the plant has been properly installed in a manner to reduce sheath damage to a minimum.

On the other hand, telephone circuits in rural communities must of necessity be in open wire. These bare open wires are vulnerable to service interruptions resulting from storms, power line contacts, tree and brush interference, traffic accidents, and construction projects, such as road widening or relocation. The wire plant is spread out over large, more or less sparsely settled areas, which makes it difficult to detect unsatisfactory conditions of the plant before service is affected.

In view of these difficulties, it is evident that a telephone company with a considerable number of its subscriber's circuits in open wire must direct much of its activities toward maintaining the wire plant at its peak efficiency. Since the most efficient plant is one that has just been built new, the object is to keep the plant as

nearly as possible in this ideal condition at the least possible cost. Only a preventive maintenance program that has been started within a reasonable period following the rebuilding of the plant and that is kept up year after year will accomplish the desired result with minimum expense. It is really surprising how long the wire plant will last when it is kept in good repair by the simple process of repairing or relacing defective items before service to any of the subscribers can be affected.

Maintenance Program For Open Wire Lines

PROBABLY THE most effective maintenance program is one that calls for (1) repairing unsatisfactory plant conditions at the time they are detected in the course of trouble or installation work by the regular work force and, (2) conducting an overall inspection at regular intervals to correct conditions not detected by the trouble men or installers.

The plant workers should be trained to observe the line as they drive by on trouble or installation assignments and report the defects on a suitable form such as the one illustrated in *Figure* 1. The following are typical defects that may be found:

(1)—Improper clearances of wires from ground or from power wires crossing overhead (*Figure* 2)
(2)—Tree and brush growing into the line wires (*Figure* 3)
(3)—Defective poles*
(4)—Leaning poles
(5)—Slipped, slack, or broken guys
(6)—Unprotected guys
(7)—Unsatisfactory condition of terminal and bridle wires at junction of open wire with cable
(8)—Split or decayed crossarms
(9)—Damaged or decayed insulator pins or wood pole brackets
(10)—Excessive or insufficient sags of line wires
(11)—Corroded line wires
(12)—Defective line splices
(13)—Debris on line wires
(14)—Broken or missing insulators
(15)—Loose, broken, or improperly made wire ties.

*Poles do not require inspection for decay as regularly as other line conditions.

Experience of many telephone companies indicates that the overall inspection shoud be made every two years. This plan enables the inspection of tree and brush conditions along right-of-ways at the same time that the lines are observed for defects. In general, trees and brush are cut back every two years to assure adequate clearance for the line wires.

In conducting an overall inspection, it is desirable to have two men work together, one to make observations and the other to drive the inspection car. A form may be used for entering the defects and their location, but an orderly long hand description with all necessary facts on a pad of writing paper is more likely to give an accurate picture of unsatisfactory conditions for future correction. In this way, repair crews will receive sufficient information to enable them to make the needed repairs and replacements in the proper manner.

The person who makes the actual inspection should be an experienced worker who can be trusted to properly judge the condition of the various plant items and not call for unnecessary replacement of obsolete items that are still in good shape for continued use. At the same time, he should be capable of detecting any condition that may be unfavorable to the telephone service. In many of the smaller exchanges the manager will usually be the only one qualified to make the inspection.

Smaller companies may find it more economical to make the inspection and repairs at the same time. In such cases, the inspector may be the foreman of a repair crews and direct the men in making the repair and replacements.

GENERAL MAINTENANCE WORK ORDER
OR
DEFECTIVE LINE REPORT

To ..... 19.....
Exchange .....
Tel. No..... Name.....
M. F. Pr..... Ter. No..... Pr.....
Address .....
Reason .....
Description of Work.....
.....
.....
.....
.....
.....
.....
.....
Should Be Completed.....
When Completed Return To.....
Completed By..... Date.....
Remarks: .....
.....
.....

Fig. 1—One kind of form used by plant workers for reporting defective line conditions detected in the course of their daily work.

Maintaining Wire Clearances

IN CHECKING clearances of wires from trees and brush, an estimate is made of the probable time the growths will take to contact the wires sufficiently to cause service trouble. In magneto exchanges, quite a bit of foliage in direct contact with the line conductors can be tolerated as long as the wires are not forced together to cause a short or a cross, and there is no great amount of noise induction due to the proximity of power lines.

In dial exchanges, however, the slightest contact of the foliage with the bare wires will cause leakage of the central office battery current to the ground or between the wires, resulting in equipment trouble and creating excessive noise. In this case, the foliage growth should be controlled to the extent where no contact with line conductors will result within two years. The minimum clearance requirement for most tree species in locations where growth is normal is generally four feet. For fast growing tree species (such as willow, boxelder, and elm) and tree and brush species in localities of heavy rainfall, more clearance must be provided.

Other abnormal tree conditions such as overhanging dead branches and dead trees leaning in close proximity to the line, will require correction to avoid the possibility of the branches falling on the wires

When tree conditions indicate that pruning or complete removal is needed, the proposed work should be explained to the owners abutting the right of way and permission should be obtained for this work. If permission is not granted, consideration should be given to other methods for securing the desired wire clearance, such as side arms on the poles or taller poles.

At subscriber stations, drop wires may require suitable protection with drop wire guards when they pass through trees or the trees may require pruning to remove interfering branches.

For span lengths not exceeding 175 feet in the heavy loading, 250 feet in the medium loading, and 350 feet in the light loading district, line conductors should clear the ground at the lowest point in each span by the following minimum heights:

Crossing over railroad tracks (measured to track rails)	27 feet
Crossing over roads or farm driveways	18 feet
Paralleling roads or farm driveways	14 feet
Paralleling roads where no part of the line overhangs part of the highway traveled and where it is unlikely that loaded vehicles will cross under the wires into the field	13 feet
Paralleling roads where fences, ditches, or embankments will prevent any except pedestrians from crossing into the field	8 feet

When the span lengths exceed the limits specified, the foregoing heights are required to be increased by 0.1 foot for every 10 feet increase in span length over the limit. This amounts to about 3 inches increase for every 25 feet increase in span length.

For telephone open wires crossing under power lines or under or over foreign communication circuits, the minimum clearances at the crossing point are as follows:

Foreign communication cables, guys, and wires over or under telephone wires and guys	2 feet
Foreign communication cables and wires associated with power circuits and not of the same construction as standard communication circuits over telephone wires	4 feet
over telephone guys	2 feet
Power cables of all voltages with grounded metal sheath or messenger over telephone wires	4 feet
over telephone guys	2 feet
Power service drop— 0 to 750 volts over or under telephone wires and guys	2 feet
Power open wire lines and power cable with sheath not effectively grounded at the following voltages:	
*0-300 volts over telephone wires	2 feet
0-750 volts over telephone wires	4 feet
0-750 volts over telephone guys	2 feet
**750 to 8700 volts over telephone wires and guys	4 feet
750 to 15,000 volts (power line with multigrounded neutral) over telephone wires	4 feet
over telephone guys	2 feet

(*Please turn to page* 68)

Fig. 2—Adequate clearance here will prevent a claim for damages.

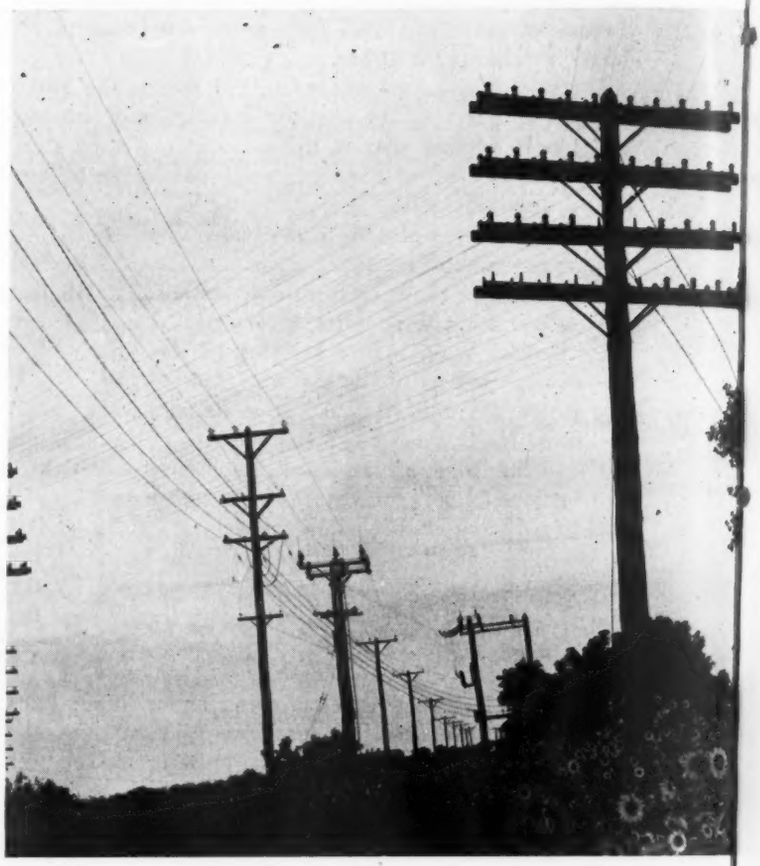
Fig. 3—Trees growing into the line wires will cause noise and equipment trouble on dial and common battery lines.

IT TAKES THREE—

Construction, Maintena

"The successful maintenance program is planned in advance and tied in with the daily activities of plant workers . . ."

By JOHN S. REED
Lincoln Tel. & Tel. Co., Lincoln, Neb.



"Good construction practices require a knowledge of methods that have proved successful in outside plant work."

A SUCCESSFUL telephone company has an adequate rate structure that, under wise management, enables it to earn money on its plant investment. Invariably, this organization will be found to have a sound program of construction to meet the demand for additional service and to improve present service standards. In addition, it is following a maintenance schedule that is planned to keep equipment and plant at a high operating efficiency with good economy.

Good construction practices require a knowledge of methods that have proved successful in outside plant work and the use of good reliable materials obtained through reputable telephone manufacturers and jobbers. For a maintenance program to be successful, it should be planned in advance and coordinated with the daily activities of plant workers in installing telephones and clearing trouble.

Since construction costs have gone up considerably during the past decade, it is desirable to employ the most economical methods that will assure good construction. Open wire leads are expensive to construct when short spans are employed, and it is desirable to use long span construction in rural exchange leads, particularly when only a few wires are carried. When it is desired to employ joint construction on rural power distribution leads, long spans of high strength wire must be placed, as the poles are usually widely spaced. *Figure* 1 illustrates a typical two-wire long span line.

High strength steel line wire is available in three strength grades, namely HTL-85, HTL-135, and HTL-190. The following table lists the characteristics of the three grades of the high strength steel wire as compared with ordinary BB steel wire:

	BB	HTL-85	HTL-135	HTL-190
Size B.W.G.*	12	12	12	12
Nominal Diameter (Inches)	0.109	0.109	0.109	0.109
Minimum Breaking Strength (Pounds)	530	793	1213	1800
Resistance per Loop Mile (Ohms)	62.4	68.24	76.46	94.2

*HTL-85 steel wire is also available in other sizes, No. 9, 10, and 14 (0.148, 0.134, and 0.080 inch). The HTL-135 and HTL-190 grades are made only in the No. 12 B.W.G. size.

The HTL-85 steel line wire can be utilized in spans of up to 225 feet in heavy loading, 325 feet in medium

ance, Service

loading, and 375 feet in light loading districts. This grade of wire has found considerable favor with telephone companies for standard span construction (150 feet in heavy loading areas) where the number of wires carried in the lead makes long span construction impracticable. Tests have shown that this wire does not develop a permanent set following ice storms, as does ordinary BB wire. The spans thus do not require extensive pulling of slack after being loaded with ice.

The HTL-135 steel line wire is intended for use in long spans of up to 350 feet in heavy loading, 450 feet in medium loading, and 500 feet in light loading districts with the sags and tensions specified by the manufacturer. It is possible to place the HTL-85 and HTL-135 wires with greater sags and increase the span lengths. However, this requires obtaining special wire sag and tension tables from the manufacturer and may necessitate the use of taller poles than would be economical in order to assure proper ground clearances for the wires at the lowest sag point.

When longer spans are desired without an inordinate increase in the wire sag, the HTL-190 steel wire can be used. This grade of wire is designed for use in spans of up to 600 feet in any loading district. The wire can be strung with relatively flat sags; provided that the pole lead is adequately supported. The peculiar feature of this newly developed wire is its ability to stretch under extremely heavy ice loads to the point where the wires in the mid span rest on the ground and yet, when the ice melts, the wires will contract back almost to their original sags.

In some instances, objections have been raised to the use of the extremely high strength steel wire because of its springiness. This springiness is the natural result of the high strength characteristics of the wire. With simple precautions, this wire can be safely handled. For example, construction men should be trained to properly hold the wire for cutting by forming a loop with the wire, taping the crossed wire at the loop with friction tape, and then snipping the loop. The tape will hold the two ends of the wire together and prevent them from flying apart. At power line crossings and in other hazardous locations, the wires being pulled along the ground in the stringing operation should be tied down with ropes staked to the ground so that they will not flip up into overhead power wires in event of their snagging on an obstruction in the reeling process. Care should be taken to see that the wire coils do not run out at the reels and let the wire ends fly. The reel tender should watch the coils and stop the reeling operation in plenty of time to enable splicing of wire ends when placing additional coils on the reels.

Fig. 1—An example of good long span construction.

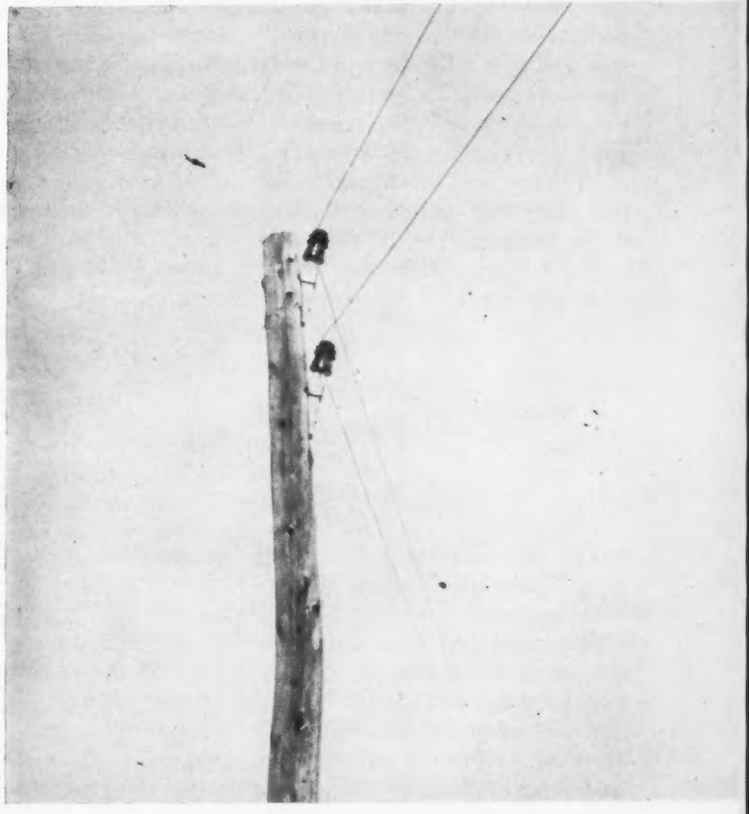


Fig. 2—Use of bracket clips to reinforce pole brackets in long span lead.

Only the proper kind of compression sleeves designed for this purpose should be employed for splicing high strength steel wire. It is important to avoid bends in the wire at splices and dead ends to prevent fatigue stresses that may break the wire.

Standard construction practices can be followed with suitable modifications to adapt them to the characteristics of the high strength wire. For example, short poles can be located on natural elevations along the lead to allow the wires to span across the low land in between and thus avoid trees and high shrubs in the low places. Poles can be set to the standard depth, but should be adequately guyed at corners and dead ends to properly support the lead. The lead-to-height ratio of the guy should be as large as possible, not less than 1 in any event.

High strength steel wire is strung on standard glass insulators in the same way as ordinary BB wire. In straight sections of the line and at slight angle corners, the brackets are reinforced with bracket clips as illustrated in *Figure* 2. Armor ties or tie wire splints (*Figure* 3) should be employed to absorb vibration stresses in the wire at the insulators.

At large angle corner and dead-end poles, the wires are attached to fin type, wet process strain insulators fastened to the pole by means of a clevis assembly on an eye bolt as shown in *Figures* 4 and 5. Galvanized steel dead-end sleeves of the compression type are used to fasten the wires to the insulators.

"Copperweld" Wire for Rural Lines

WHEN LOW resistance and good transmission combined with high strength are important factors, 40 per cent conductivity copperweld wire can be utilized, as it is well suited for the trend towards long spans in rural open-wire leads. This wire is composed of a copper jacket intimately welded to a steel core. Since the wire has good conductance, small sizes are practical. Long life is assured because the copper jacket resists corrosion and the steel core provides strength to withstand stresses due to ice loads.

The following table lists characteristics of the several sizes of copperweld wire employed for rural lines:

Size in A.W.G. or Inch	Weight in Lbs./ Mile	Rated Breaking Strength, Lbs.	Telephonic Resistance Ohms/Loop Mile 1000 cycles
.104 E.H.S.	158.5	1325	24.8
.104	158.5	1177	24.8
10	152.1	1130	25.8
12	95.68	785	40.5
.080	93.77	770	41.6

The 104 mil extra high strength "Copperweld" wire is especially adapted to long span construction in rural and joint-use leads. The No. 12 or 80 mil size can be used with excellent results in light pole leads, employing medium length spans. This size of wire is light in weight, easy to handle, and low in cost. It provides strong construction that withstands storm conditions and gives many years of reliable telephone service. The table below gives the span lengths possible with several sizes of copperweld wire:

Size in A.W.G. or Inch	Span Length in Feet—Heavy Loading	Span Length in Feet—Medium Loading
.104 E.H.S.	400-450	500-600
.104	350-400	400-500
10	350-400	400-500
12	250-300	350-450
.080	250-300	350-450

"Copperweld" wire is strung in the same manner as copper wire, with the difference that longer spans are placed. Although standard copper ties can be placed,

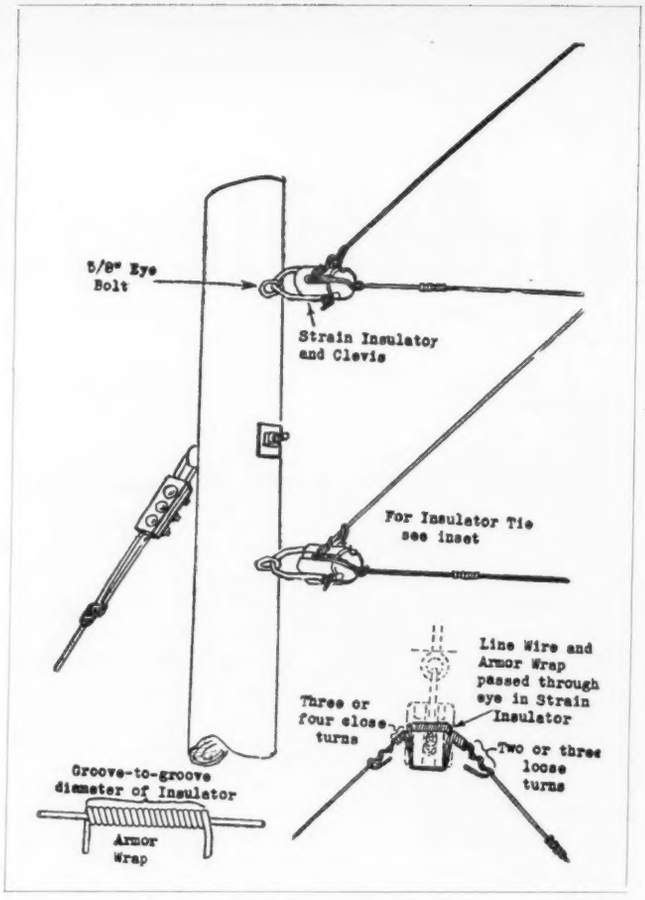

5/8" Eye Bolt
Strain Insulator and Clevis
For Insulator Tie see inset
Line Wire and Armor Wrap passed through eye in Strain Insulator
Three or four close turns
Two or three loose turns
Groove-to-groove diameter of Insulator
Armor Wrap

Fig. 3—Method of attaching line wires to strain insulators at large angle corners in long span leads.

trouble with chafing and breakage of conductors is avoided by using a "Grip-Flex 38" tie which consists of a reinforcing wire and a binding wire. The reinforcing wire is already shaped in a manner that enables it to be wrapped around the copperweld wire at the insulator. The binding wire, which is a length of annealed copperweld wire, is wrapped around the combination of line conductor and reinforcing wire and then tied around the insulator.

Cable Extensions With Plastic Jacketed Cables

CITY AND farm cable construction presents a serious problem to telephone companies because of a critical shortage of lead which is required for sheathing the cable. The urgent need for cable to facilitate the expansion programs of these companies has spurred the development and production of plastic sheathed cables. These include Alpeth and Stalpeth cables developed by the Bell Telephone Laboratories and Ankoseal cable developed and produced by the Ansonia Electrical Co.

The Alpeth cable consists of a core of paper insulated copper conductors covered with paper wrapping, a layer of corrugated aluminum strips, and outer covering of polyethylene. Cement is used to seal the overlapping edges of the aluminum strips and to bond the aluminum layer to the polyethylene covering. The Stalpeth cable is constructed in the same manner, except that it has a terne plated corrugated steel layer between the aluminum layer and the polyethylene sheath to obtain a better seal and to

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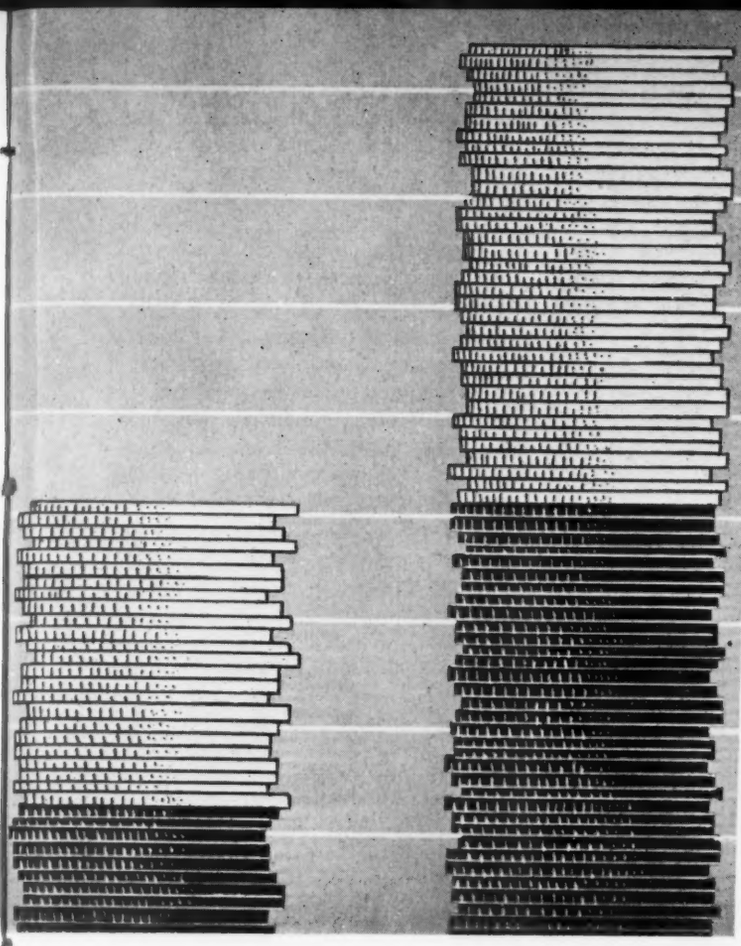


The Markets For New Capital

By ALBERT W. KIMBER

THE METHOD of selling something that is difficult to sell by first selling the customer something he will readily buy, is one of the oldest expedients in salesmanship. It has been practiced in the distribution of many lines of merchandise, but in recent years most extensively in the sale of securities, especially in the sale of common stock through the prior sale of convertible bonds.

Sometimes the purpose of the issuing company is nothing more than the raising of new capital, the new convertible securities are designed to be attractive to buyers by offering them the superior security of a bond together with a speculative position in the stock, but the company does not really expect much of the convertible issue to be converted. Such, for example, was the issue of the New York Central & Hudson River Railroad in 1915 of 20-year 6% debentures, convertible until May 1, 1925 on the basis of $105 par value of debentures for each share of $100 par stock. Up to 1925 the stock paid no more than 7% per annum dividends, and the difference in the income return proved insufficiently attractive to most of the debenture holders, so that they declined to convert. When the debentures were issued in 1915 the finances of New York Central were badly strained, and the convertible debentures were in the nature of a life saver; by 1925, however, the company's financial position had improved so that it was able to retire for cash at the redemption price of 105 all of the debentures remaining outstanding; and this action, of course, forced a good many last-minute conversions. Then the dividend rate on the stock was raised to 8 per cent.

Convertible bonds or debentures can often be sold with a coupon of lower rate than the company is paying on its first mortgage bonds. An example is Central Hudson Gas and Electric, which in 1949 sold at a price of 100.90 some six million dollars of 10-year 2% unsecured debentures at a time when its first mortgage bonds were on a 2.875% basis. This new transaction obtained very low cost money for the company, so long of course as the debentures should remain outstanding as such. They were made convertible into common stock of the company at $9.50 per share for the first two million dollars of debentures converted, then at $10 per share for the next two million of debentures. By June 27 of this year $4,000,000 had been so converted and the conversion price for the stock then rose to $10.50 per share. At the same time the dividend rate on the stock, which had been $0.60 per share per annum, was increased to a $0.70 per annum basis (August 1), but the stock in mid-August was still selling at only $11.50. The company undoubtedly is pleased to have had the use of this debenture money at only 2% per annum and need not care how long the remaining debentures remain outstanding as such, but of course any unconverted balance at maturity in 1959 will have to be paid at 100.

The issue of convertible bonds or debentures can often solve many corporate problems. One of them is that when the ratio or percentage of mortgage bonds already outstanding has reached the limit or is approaching it, a new issue in the form of convertible debentures can be sold, having no specific security but with the privilege to the holder to exchange the debentures for common stock of the company on terms which offer the possibility of profit in one way or another. Of course, the primary purpose of issue is the raising of new capital, and sometimes it is only that, as in the case of the New York Cen-

tral mentioned above. But sometimes the convertible issue will solve other and very serious problems.

One of them arises where the common stock of the company is selling in the market for less than its book value. From time to time, the common stock of some public utilities may sell at a price higher than its book value, or lower than that value, and over a period of years every one of them does one or the other. Now the sale of an additonal block of common stock for less than the book value per share would, of course, dilute the equity of the existing stockholders in their company, and this must be avoided if at all possible, in fact, in some states would be illegal. For example, if the book value is $40 per share and the common stock is currently selling in the market at $30, it would be unfair to the existing stockholders to offer a new block of stock at $30. And if offered at or close to the market price, the success of the offer would be doubtful. But, provided the stock had sold during the not too distant past at its book value, say $40 per share, an issue of convertible bonds could be offered, with privilege of conversion at $40 per share for the stock, and run a fair chance of success. This, of course, assuming that the earnings prospects of the company appear favorable to the return of such conditions as would support a market price of around $40 per share.

But most of the convertible debentures marketed in recent years have been intended and designed specifically for conversion, their sale was essentially an indirect sale of stock, and the issuing company has desired them converted before maturity. The most prominent example of this has been the American Telephone & Telegraph Company financing. The most recent issue of convertible debentures by this company was the 3.50% offered to stockholders in June and July of this year in the amount of $498,656,300. The company received subscriptions of $492,000,000 approximately, or 99% of the offering. The debentures are convertible into stock at 136, that is, upon payment of $100 in debentures plus $36 in cash for each share of the stock.

This now makes five offerings of convertible debentures which A.T.&T. has made to its stockholders since 1946. The conversion prices of the stock at time of sale of the debentures were made at from $130 to $150 per share, while the stock was selling in the market most of the time at around $155. Of the first such issue, the $343 million of 2.75% offered in November 1946, the conversion price of the stock was made too high, namely 150. This was reduced in two steps to 146 (July 1950), but that is apparently still too high in relation to the current market price of the stock, for on August 22 last some $181,124,800 of these debentures were still outstanding unconverted. This is the only poor showing in the American Tel & Tel list of convertibles. As time passed and the company had to make further sales of convertibles the conversion price was reduced, so that on the last offering made in June-July 1952 the conversion price was 136 as against 138 on the last previous issue made in March 1951. Nevertheless, most of the issues have appeared to the holders as attractive for conversion so that by August 22 of this year only $24,544,900 of the original $357 million 2.75% due 1957 remained outstanding unconverted and $7,172,000 of the original $394 million 3.125% due 1959, both convertible into stock at 140. Despite the low coupon rates of these bonds, which represented

TABLE ONE—TELEPHONE COMPANY NEW CAPITAL ISSUES
June-August 1952

Bonds and Debentures	Amount	Price	Yield
June 1952			
American Telephone & Telegraph Conv. 3.50% deb. 1964	$492,000,000	100.00	3.50 %
California Water & Telephone Deb. 4.25% 1977	3,000,000*	100.00	4.25 %
Southern New England Telephone Deb. 3.25% 1985	15,000,000	101.014	3.20 %
New Brunswick Telephone (Canada) Deb. 4.50% D 1972	3,500,000	100.00	4.50 %
Maritime Telephone & Telegraph (Canada) 1st 4.50% H 1972	2,500,000	100.00	4.50 %
West Coast Telephone (Wash.) 1st 3.875% 1980	2,000,000*	100.00	3.875%
July 1952			
General Telephone of Illinois 1st 3.875% 1982	3,750,000*	100.00	3.875%
General Telephone of Wisconsin 1st 3.625% 1982	1,250,000*	100.00	3.625%
Okanagan Telephone (B. C.) 1st 5% 1970	600,000	100.00	5.00 %
August 1952			
Carolina Telephone & Telegraph (N. C.) 3.375% Debs. 1982	7,000,000*	100.00	3.375%
La Tuque Telephone (Canada) 1st 5% A 1972	425,000	100.00	5.00 %
Preferred Stock	**Number of shares**	**Price**	**Yield**
June 1952			
Associated Telephone Co. Ltd. 5% Pfd. $20 par	350,000	20.00	5.00 %
July 1952			
Durham Telephone (N. C.) 6% Pfd. $25 par	16,000	25.00	6.00 %
August 1952			
Peninsular Telephone (Fla.) $1.30 Pfd. $25 par	160,000	26.00	5.00 %
Commonwealth Telephone (Penna.) 5.50% Pfd. A $100 par	5,000*	....	....
Common Stock			
June 1952			
No offerings of this class			
July 1952			
Southeastern Telephone (Fla.) Com. $10 par (0.80)	64,000	11.00	7.27 %
Norwesto Communications Ltd. (Ontario) Com. No par (0)	50,000	10.00	....
Middle States Telephone of Illinois Com. $10 par (1.00)	48,000	13.75	7.27 %
August 1952			
Maritime Telephone & Telegraph (Canada) Com. $10 par (0.80)	261,804	13.00	6.15 %

(*) Private placing.

very low cost bond money, the company on August 1, 1952 called for payment at their redemption prices all remaining outstanding debentures of these two issues. Undoubtedly before the payment date additional amounts of them will be converted, depending on the ability of the stock market to absorb the new shares of stock to be created by the conversion process.

These various transactions in convertible debentures made by American Tel & Tel must be rated on the whole as highly successful, resulting, as they have, in the issue and sale of huge amounts of the capital stock of the company, amounts considerably larger than the stockholders of the company and the open market combined would have absorbed. And, of course, if the company had offered new stock in volume at anything like the conversion prices named in the convertible debenture offers, the effect on the market for the stock might have been disastrous. As it has turned out, the market price of the stock has held firm, the market prices of the convertible debentures have risen to meet it.

Bonds and Debentures

NEW OFFERINGS of long-term bonds for public utilities in the United States during the first half of this year were the smallest for the corresponding period of the last five years, except for the big Telephone offering, which remained open till the end of July. Despite the shrinkage in volume during the 1952 six months, inventories in dealers' hands in June were larger than normal, representing slow sales of many of the new offerings. Even such an issue as the $40 million Public Service Electric and Gas 3.375% 1972, offered at 100.799, dragged along very slowly; a month after the offering there was still a fairly heavy supply of unsold bonds. Some other large transactions fared better, such as the Commonwealth Edison $40 million first 3.35% 1982 and the Public Service of Indiana $25 million of first 3.375% 1982, but generally the markets during June and July were unresponsive to the new offerings, buyers held back awaiting developments in the money market and in the field of U. S. government securities.

New telephone company bonds offered during the period were few in number, but included the big issue of convertible debentures of American Tel & Tel mentioned above. This offering to stockholders was a pronounced success. The amount offered through rights was $498,656,300, and subscriptions were received for $492 million. The small unsubscribed balance was offered on a number of different stock exchanges and readily sold at a premium. But the new money cost the company more than any other block it had placed since the end of World War II. The coupon rate on the latest issue is 3.50%, which compares with the 3.375% paid on its debentures of March 1951, and the 3.125% paid on its issue of 1949. This higher cost of bond money has been rather general this year for the utilities.

Action of the U. S. government securities markets during this last three-month period was most unsettling. The new offering in July of $4,000 million of 2.375% due 1958, for new money, was not fully taken. On top of this, for the purpose of refunding one-year 1.875% certificates, the Treasury offered in conversion a new one-year issue of $2,400 million bearing 2% per annum interest. However, the holders of some $400 million of the maturing issue found the new terms unattractive and refused to convert, therefore they had to be paid off in cash. Now there looms over the market $10,861 million of 1.875% certificates of indebtedness maturing on October 1, but a large part of the maturing certificates is now held by the Federal Reserve itself, which may simplify the problem.

The struggles of the U. S. Treasury to avoid paying higher coupon rates on its various obligations, and the slow down drift in its credit during the period has been unsettling particularly to the big institutional buyers of corporate bonds, and accounts in large part for their standoffish attitude toward new corporate bond offerings. With the exception, however, of convertible bonds.

There have been large new issues of convertible bonds during this period, especially by industrial corporations, and all of them proved popular and were quickly sold. Among these issues was the Dow Chemical $100 million of 3% convertible debentures due 1982 which were priced at 101.50 and met heavy demand in spite of what was considered a com-

(*Please turn to pag* 82)

ONLY THING HE FEARS!

New Construction Me t

"New methods and new tools have played an important part in holding costs down and in helping the telephone industry meet its objective of constant improvement in service . . ."

THE POLE tongs illustrated in *Figure* 1 are designed to enable one man to do the work of two when controlling and positioning poles during pole setting operations. Ordinarily, two cant hooks or peavies are needed when a pole is being erected and then faced in the proper direction, and one man is required for each cant hook to properly control the pole.

With the pole tong, one man can handle the work of controlling and positioning the pole as indicated in *Figure* 2. The tongs are adjustable to one of three positions shown in *Figure* 3 to handle any size of pole.

Another tool much used in pole erection work is the pike pole. Ordinary pike poles have the pike point exposed at all times, making them hazardous to transport or handle between piking jobs.

The reversible safety-point pike pole illustrated in *Figure* 4 is designed to reduce this hazard to a minimum. The removable point is made from steel and is heat treated. It is flat on one end with a gimlet point on the other. A spring catch on the side of the point holds it in place on the ferrule. This spring catch is button operated and will quickly release the point when it is to be reversed. Worn or damaged points can be replaced or taken to the shop for sharpening.

A wire lift attachment is available for converting the pike pole into a wire-raising tool that is useful for guiding wires through trees and over obstacles. It can also be employed to raise line wires to crossarms or brackets in open wire construction.

The pole is turned from Douglas Fir, tapered or straight as desired and reinforced at the butt end by a steel ring. To make it more resistant to abuse which causes splintering, the pike pole is now provided with a plastic finish.

Battery Eliminators for Magneto Telephones

FOR MANY farm mutual companies where subscribers have to provide their own dry cells for their magneto telephones, the ELECTROX battery eliminator, illustrated

e thods Aid Industry . . .

By RICHARD ALLEN

in *Figure* 5, will relieve them of the nuisance of replacing worn out cells if they are on a "high line" and can obtain the electric power needed to operate the eliminator.

This battery eliminator provides sufficient smooth, noiseless direct current to operate one magneto telephone transmitter, replacing the two dry cells commonly used for this purpose. The unit consists of a transformer, full-wave copper-oxide rectifier, filter choke and condenser, housed in a tubular steel case. The leads coming out of the case are intended to be connected to a 115 volt a-c source.

New Pengo Augers Increase Usefulness of Earth Boring Equipment

DESIGNED FOR rapid penetration in hard-to-bore soils and faster digging in ordinary soils, the new "Pengo Jr." pilot bit for Danuser augers, illustrated in *Figure* 6, is patterned after the Pengo hardpan pilot bit used on heavy-duty augers. The new bit features a live-action "fishtail" design which eliminates the centerpoint and the resulting tendency to pivot on stones or hard ground. Forward-angled cutting lips either side of the center line "slice" a pilot hole ahead of the wedge-shaped main pilot blade, which in turn breaks up the earth ahead of the auger helix. Rapid penetration in hard-to-bore soils and faster boring in ordinary ground are features claimed for the new unit.

The pilot bit is cast from special abrasion-resistant alloy and is heat treated for maximum service life. It is equipped with standard thread to fit all Danuser Augers from 6″ diameter up.

For boring holes for expanding anchors, Pengo Triple-Flight anchor augers (*Figure* 7) are now available in three sizes, a 9″ for 8″ expanding anchors, 11″ for 10″ anchors and 13″ for 12″ anchors. These new augers are obtainable with different hubs to fit all makes of earth boring machines.

These augers retain the identical cutting features of the Pengo Earth Auger, except that a three-flight single helix is used to carry dirt out of the hole instead of the valves employed on larger augers. This permits completion of the hole with less than half as many trips up and down, and cleans the bottom of the hole better. The size of the center shaft is reduced, which makes it possible to bring rocks out of the hole. This auger is intended for use in all types of soil, but works exceptionally well in hard-pan, sandstone, frozen ground, permafrost, or anywhere the going is tough.

The cutting heads of the anchor augers are equipped

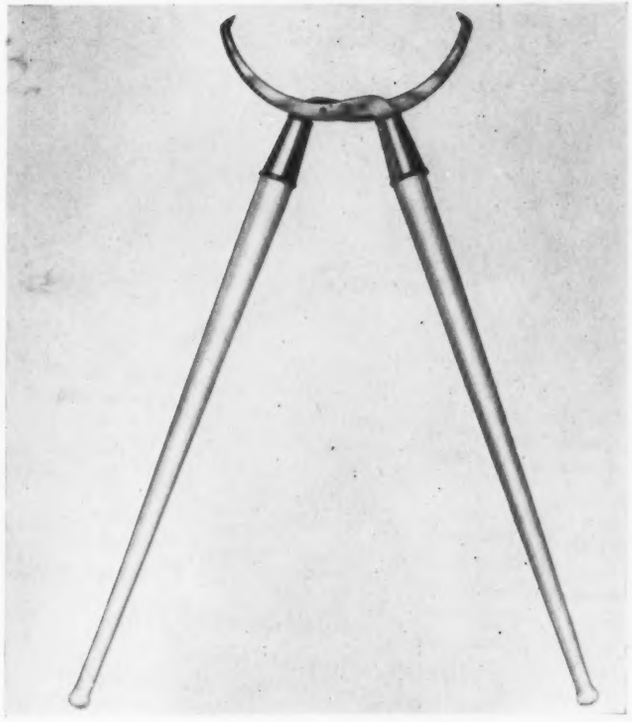


Fig. 1—A. B. Chance Company's Pole Tongs.

Diamond DHD Hammer Drive Anchors

Hot Galvanized

Made of aluminum, with steel nails. For attaching trim, etc., to concrete.

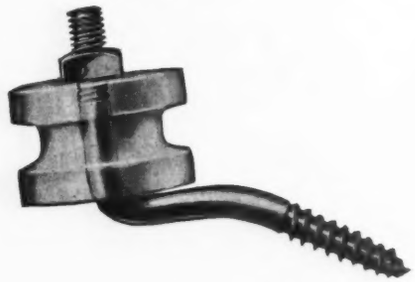
Holds greater load when fastened to stone than wood screw of same diameter screwed into wood. Simply drill hole, place shield through hardware and hammer nail in. Packed with nails in same container.

No.	Size, In. *O.D.	Lgth.	Std. Pkg.	Wt. Lb. per 100
4314	3/16	7/8	100	1
4320	3/16	1 1/4	100	1 1/8
4416	1/4	1	100	1 1/2
4420	1/4	1 1/4	100	2
4424	1/4	1 1/2	100	2 1/8
4520	5/16	1 1/4	100	2 3/4
4528	5/16	1 3/4	100	3 1/2
4536	5/16	2 1/4	100	4 1/2
4544	5/16	2 3/4	100	5
4632	3/8	2	100	6 1/2
4652	3/8	3 1/4	100	8 1/4
4836	1/2	2 1/4	50	11 1/2
4856	1/2	3 1/2	50	15 1/2

*Use same diameter drill as o.d. of anchor shown.

Diamond Angle Screw Fixtures

Hot Dip Galvanized



For attaching knobs for drop wiring on wood or stone structures. Diamond intergalvanized. On brick or stone, use multi-size screw anchors. Insulators are extra.

	840	841
No.		3/8
Size ..... inches	5/16	2
Length of Screw End ..... inches	1 3/4	3 1/2
Length of Shank ..... inches	2 1/4	
Size Anchor	16–18x1"	20–24x1 3/4"

Diamond Insulated Screw Eyes

Hot Galvanized Screw Eye

Porcelain ring has diagonal opening which allows easy insertion of wires and when pulled taut it cannot become released from ring. Porcelain is glazed on interior surface of ring and on surfaces of slot.

If used in masonry, use multi-size screw anchors.

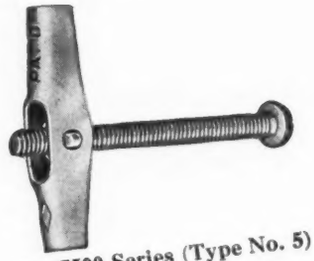
Opening in all sizes, 9/32 inch.

Packed in containers of 100. Shipping weights are approximate.

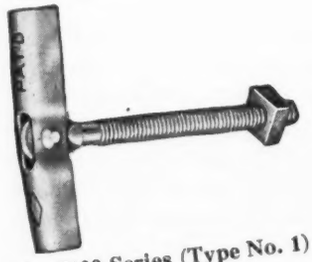
No.	Type	Dimen., In. Eye	Shank	Size Anchor	Wt., Lb. per 100
830	5/8"S	5/8	1	10–14x 3/4"	85
831	5/8"L	5/8	2	10–14x1"	95
832	1"S	1	1 1/8	10–14x1"	180
833	1"L	1	2 1/8	10–14x1 1/2"	190

Diamond Toggle Bolts

No. 7000 Series, Spring Type



No. 7500 Series (Type No. 5)



No. 7100 Series (Type No. 1)

Furnished cadmium-plated. Heads available on spring and Type No. 5 toggles: **F**, with flat head screws; **R**, with round head screws; **M**, with mushroom head—1/8 inch diameter only; **N** type: reverse **R** or **F** screw and add nut; **P** type: reverse **R** or **F** screw and add Acorn nut. Specify screws; spring type and No. 5 type furnished with round or flat head; round head furnished unless otherwise specified.

Diam. and Length In.	Spring Type No.	Drill Size In.	Wt., Lb. per 100	Type No. 5 No.	Drill Size In.	Wt., Lb. per 100	Type No. 1 No.	Drill Size In.	Wt., Lb. per 100	No. Pcs. in Box
1/8 x3	7023	3/8	2	7523	3/8	2	7123	1/4	3	100
1/8 x4	7024	3/8	2 1/4	7524	3/8	2 1/4	7124	1/4	3 1/4	100
3/16 x3	7033	1/2	3 3/4	7533	1/2	4 1/4	7133	3/8	4 1/4	50
3/16 x4	7034	1/2	4 1/4	7534	1/2	4 3/4	7134	3/8	4 3/4	50
3/16 x5	7035	1/2	4 3/4	7535	1/2	5 1/2	7135	3/8	5 3/4	50
3/16 x6	7036	1/2	5 1/2	7536	1/2	6	7136	3/8	6	50
1/4 x3	7043	11/16	6	7543	11/16	7	7143	7/16	7	50
1/4 x4	7044	11/16	7 1/4	7544	11/16	8	7144	7/16	9	50
1/4 x5	7045	11/16	8 1/2	7545	11/16	9 1/2	7145	7/16	10	50
1/4 x6	7046	11/16	9 1/2	7546	11/16	10 1/2	7146	7/16	10 1/4	50
5/16 x3	7053	13/16	11	7553	13/16	12	7153	9/16	11	50
5/16 x4	7054	13/16	13	7554	13/16	13 3/4	7154	9/16	12 1/2	50
5/16 x5	7055	13/16	15	7555	13/16	15 1/2	7155	9/16	14	50
5/16 x6	7056	13/16	17	7556	13/16	17 3/4	7156	9/16	16 1/2	50
3/8 x3	....	....	....	7563	7/8	14 3/4	7163	5/8	17 1/2	50
3/8 x4	....	....	....	7564	7/8	17 1/2	7164	5/8	19 1/2	50
3/8 x5	....	....	....	7565	7/8	20	7165	5/8	22 1/2	50
3/8 x6	....	....	....	7566	7/8	23 1/2	7166	5/8	24 1/4	25
1/2 x3	....	....	....	....	....	....	7183	7/8	33	25
1/2 x4	....	....	....	....	....	....	7184	7/8	40	25
1/2 x5	....	....	....	....	....	....	7185	7/8	44 1/2	25
1/2 x6	....	....	....	....	....	....	7186	7/8	52	25

LEICH

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MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

with the same fishtail pilot bit and replaceable cutting blades used on all Pengo Augers for rapid penetration and fast drilling in hardpan, frozen ground, most sandstones and all ordinary soils. Shank plates, bolts, etc., are also interchangeable with other Pengo Augers, so that users need maintain only a minimum stock of replacement parts.

The Pengo Augers are manufactured by Petersen Engineering Co., Santa Clara, Calif.

Tips on Use and Care of Hammers

THE HAMMER is a common and simple tool, yet it has caused many injuries to workers. Such injuries can be averted by using the right type of hammer for the job, handling the hammer in the right way, and keeping it in good repair.

There is a great variety of hammers, each designed for a specific job. Thus a claw hammer is primarily intended to drive nails. The claw end of the hammer, which may be curved or straight, is intended for pulling nails. The claw hammers commonly used in the telephone industry have a straight claw which is better adapted for prying than the curved claw. This hammer is also suitable for light striking of small hammer drills as in drilling holes in masonry for anchoring screws or fixtures (*Figure* 8).

Claw hammers should not be used for heavy striking of cold chisels or similar tools as the hammer face has a somewhat harder temper than other types of hammers and may chip. A striking or double-face hammer of the proper weight should be employed for such work. This type of hammer has a softer face than the claw hammer and is thus less likely to chip.

Before using a hammer, inspect it to make sure it is in good condition, with the handle free from cracks or defects and set tight in the head, so that the latter will not fly off in the work operation. Grasp the hammer near the end, never close to the head. "Choking" the hammer reduces the force of the blow and, in addition, makes it harder to keep the hammer head straight while striking the blow. Hold the hammer so that the face is parallel to the work. This will spread the force of the blow over the entire face of the hammer and prevent damage to the edges. With the hammer properly held, it is less likely to slip off the work or mar it.

The hammer blow should be controlled to the extent needed. Thus, to strike a light blow, the arm should be moved back only far enough to give the necessary force to the blow. A very light or tapping blow is made by swinging the handle at the wrist without moving the arm. For a heavy blow, the arm is raised straight back from the work and the hammer is then brought down with a sharp quick motion.

When using the hammer in drilling operations or the like where there are flying chips and dust, goggles should be worn to protect the eyes from injury. Light weight clear plastic goggles with wide angle vision are appreciated by workers and are more likely to be used than heavy metal frame goggles that restrict the vision and cause discomfort.

Like any other tool, hammers need proper care to assure their long life and freedom from defects that may lead to injury. They should be kept clean at all times as a greasy hammer is very apt to slip out of the worker's grasp or glance off the work. The edges of the hammer head should be dressed regularly to remove battered edges. The hammer face should be kept smooth and flat and at right angles to the axis of the head by proper dressing as required. A rounded head will cause the hammer to glance off the work.

The hammer head should be tight on the handle with the hardwood or steel wedges securely in place. Loose wedges should be driven back in place to tighten the handle. It is not a good practice to use screws or nails as a substitute for wedges as they may come out or split the handle. Lost wedges must be replaced with the proper kind and sizes of wedges. The hammer handle itself must be in good condition. It is cheaper to replace a broken or split handle than to have it cause an accident. It is a

Fig. 2—The Chance pole tongs in actual use to position a pole.

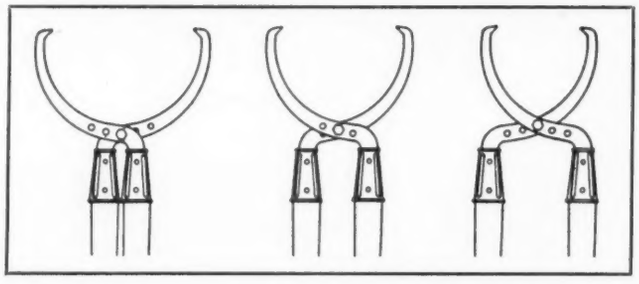


Fig. 3—Showing the three positions of the Chance Pole Tong.

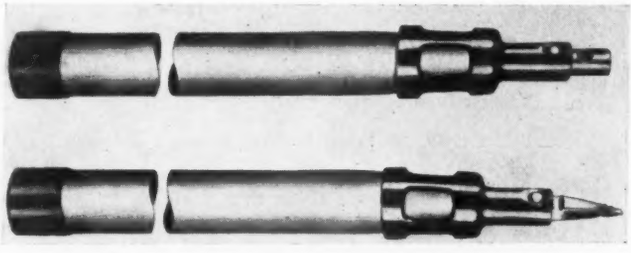


Fig. 4—Chance reversible safety-point pike pole. Top—Showing point reversed to present blunt end. Bottom—Point inserted in operating position.

Fig. 5 — Schauer Electrox battery charger.

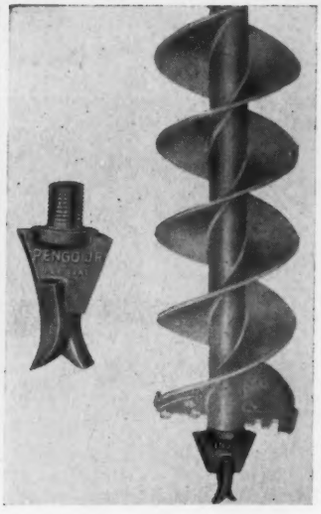


Fig. 6 — "Pengo Jr." point bit.

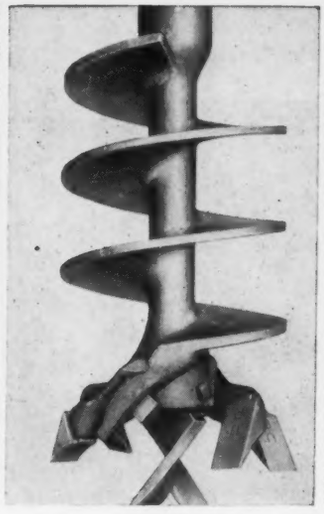


Fig. 7—Pengo Triple-Flight anchor auger.

Fig. 8—Drilling holes in masonry for screw anchor.

good idea to use hammers with a steel head formed integral with a steel handle as shown in *Figure* 8. The lower half of the handle is covered with leather to absorb the shock of the blows and thus minimize transmission of jars to the hand.

Outside Type Protectors Prove Indispensable

THE PRESENT boom in residential building has produced an astonishing variety in architecture and construction of residences. In many cases, the house construction is such as to present difficulties in the way of installing station equipment, particularly protectors. In these situations, there may be no basement and no connected garage and the utility room is not satisfactorily placed or is not suited for the protector location, or the basement is completely finished (with covered ceiling). It is then necesary to mount the protector outside and run bridle wire or protected inside wire from the protector to the telephone instrument.—(To Be Concluded In The October TELEPHONE ENGINEER & MANAGEMENT.)

GOSSIP!

CERTAINLY NOT!

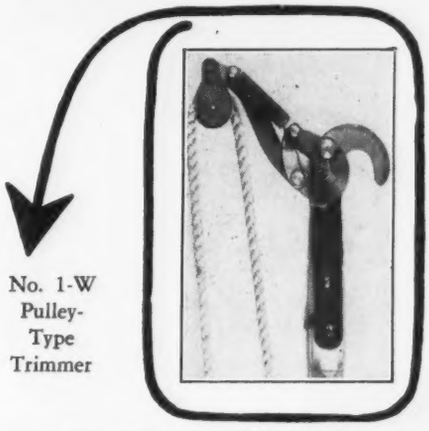
I WAS REMARKING HOW MUCH EASIER SWITCHBOARD WORK IS WITH

Runzel NYLON CORDS

Ask any operator . . . they'll all tell you that Runzel *Nylon* Switchboard Cords are the finest in the field. Smooth, long wearing, with extraordinary flexibility, Runzel cords are easy to keep clean. They are moisture and mildew proof and offer you a clarity of reception that is protected from foreign sound disturbances. Installation is so easy too, thanks to correct leg length and tracer color. Order your Runzel *Nylon* Switchboard Cords or any type Runzel Cord from Buckeye to-day. You'll be more than pleased with Runzel Cords and Buckeye service.

BUCKEYE TELEPHONE & SUPPLY CO.
1250 KINNEAR ROAD COLUMBUS 8, OHIO

BARTLETT
TREE TRIMMERS



No. 1-W Pulley-Type Trimmer

PRIORITY REQUIRED

Compound lever construction, exclusive with the Bartlett No. 1 Type of Tree Trimmer, gives maximum cutting ease and efficiency. Light weight, yet built to stand up under severe use. Also made with Bakelite Insulator for use around power lines.

Write for free catalog showing complete line of tree trimmers, tree bracing material, and tree surgery supplies; also Tree Paint.

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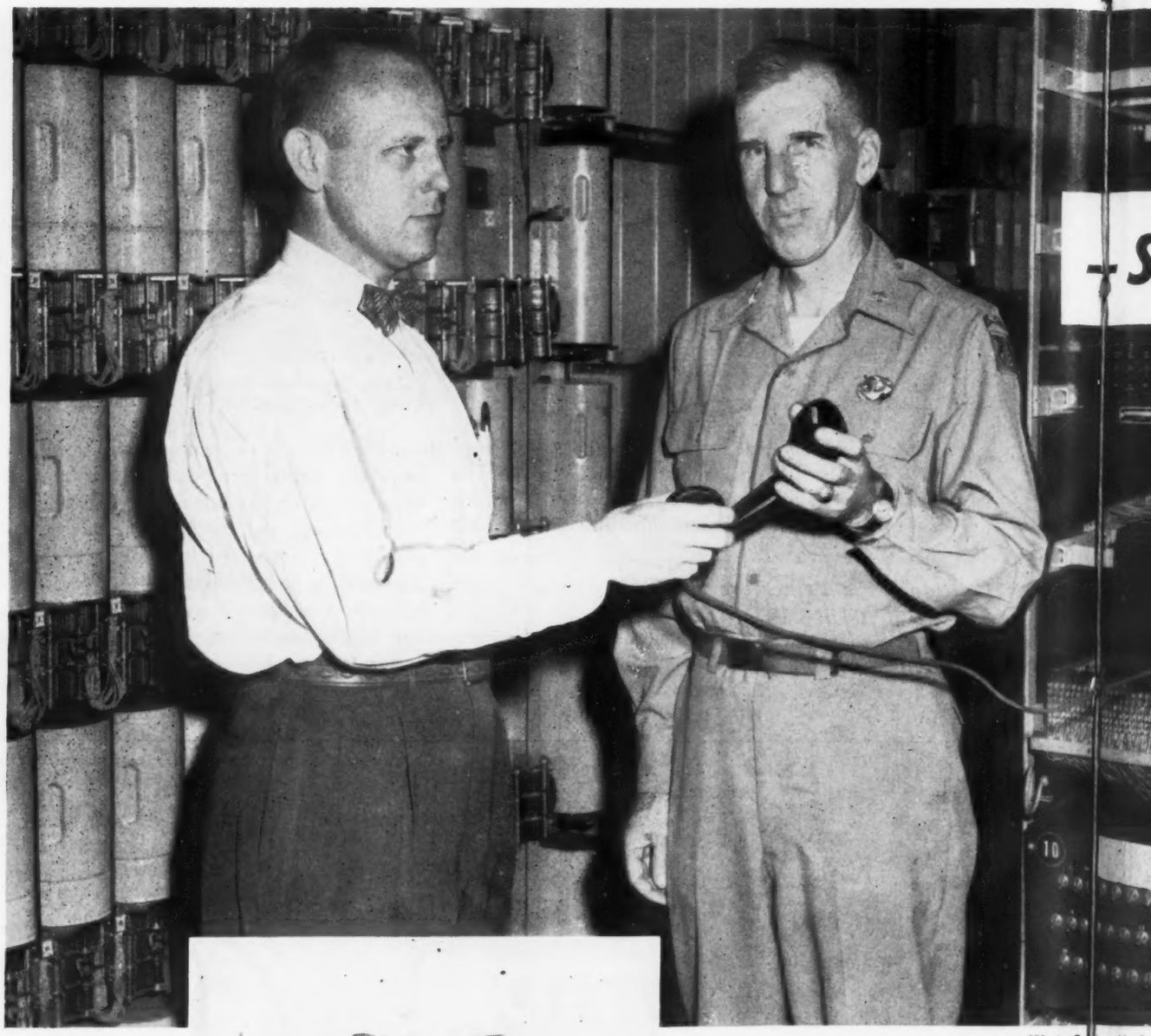
3003 East Grand Blvd., Box 52, Detroit 2, Mich.



(Photo Courtesy U. S.

Top: W. E. Marshall, local manager of the Carolina Telephone and Telegraph Company, hands the telephone to Col. R. D. Graves, deputy chief of staff, Ft. Bragg, to place the first call on June 5th.

Bottom: New "Fayetteville No. 7" exchange building which serves the Wherry Housing Area, Ft. Bragg, N. C.

(Photo Courtesy U. S. Army)

Automatic makes equipment twice...

...STILL MEETS FAYETTEVILLE SCHEDULE!

In November, fire destroyed the new Strowger Automatic exchange
being installed at Fayetteville, North Carolina.
Immediately, we went into high gear—
completely replaced the damaged equipment
and still met the original June cutover schedule!

This accomplishment shows how
our smoothly-geared engineering and production facilities
can meet emergencies.
For in the time normally allotted to manufacture and install
a 2100-line, 2700-terminal exchange,
we made and installed it *twice!*

In emergencies, call Automatic Electric Sales Corporation,
Chicago (HAymarket 1-4300).
Ask for "Emergency Service"—or for any representative you know.
If you need temporary equipment, we'll loan it to you.
And we'll supply your new equipment—*fast.*
Like other telephone men who have called us,
you'll get instant attention, quick action!

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

Questions And Answers

Edited By
JAY G. MITCHELL

In this issue Mr. Mitchell discusses—(A)—Grounding of Shielding of Ankoseal Cable; (B)—Laying Out Transposition Scheme for Thirteen Mile Lead, and (C) — Messenger Clamps for Light Weight Spun Cable.

QUESTION:—In installing Ankoseal cable should the aluminum sheathing be grounded as a protection against lightning, or can such grounding be omitted? We are in process of installing such cable and would appreciate a prompt reply.

ANSWER:—This inquiry, in several forms, has been made by some of the telephone companies that are installing cable of this type. In order to cover the inquiry as fully as present experience makes it possible to do so it is necessary to go back to first principles. It has been found that any aerial conductors in the telephone plant, whether in open wire or cable, must be equipped with effective fuse and air-gap protection. Of course such fuse and air-gap protection is effective only when it is *connected to a good earth contact.* The approved practice is well standardized and is well established throughout the progressive elements of the telephone industry.

It is our opinion that standard types of fuse and air-gap protection must be provided for *all aerial* conductors in telephone plant whether open wire or cable. It is believed that this rule is applicable both to the lead sheathed cable and to the other types of cable with full force. From this point of view, therefore, it seems that standard methods of protection must be provided for all aerial cable conductors regardless of the type. The lead sheath of telephone cable affords a shield which has the effect of reducing the disturbances due to the field of force surrounding other paralleling circuits. The aluminum sheath in Ankoseal telephone cable will likewise shield the conductors of the Ankoseal cable with the effect of reducing the disturbance due to the field of force surrounding other paralleling circuits. That being the known condition it is our belief that the aluminum sheath, like the lead sheath, should be grounded and bonded to the messenger. However the contact with the aluminum sheath of Ankoseal cable should be carefully made and it is suggested that some of the standard cable clamps, with ample length and contact surface, be used and very carefully installed and connected to a *good ground at the end of each section* of the cable where the aluminum sheath is exposed.

The conventional fuse and air-gap protection is the method, however, of protecting the cable against lightning. The grounded aluminum sheath, also grounded, will not detract from the protection against lightning and will, in all probability, reduce the disturbance in the telephone circuits from paralleling circuits.

Finally it may be safely said that the incidence of damage due to lightning is not uniform and that the conservative practice is to install ample protective devices initially and then, if in a favored location, reduce the amount of protection when it has been demonstrated that it is not all needed.

QUESTION:—The communication company for which I am employed is at the present time planning to construct a telephone line to consist for the most part of one crossarm of five metallic circuits and extending for a distance of approximately thirteen miles.

We contemplate transposing this line in it's entirety. The line is to be built on one hundred fifty foot spans with insulators on twelve inch center spacing.

The first nineteen poles of this line will have a full two crossarms. We have decided to transpose this line as follows. Can you advise as to the correctness of doing so?

1-*R Section* (*nineteen poles. Every fourth pole to be transposed.*)

1-*E Section* (277 *poles. Every ninth pole to be transposed.*)

1-*L Section* (142 *poles. Every ninth pole to be transposed.*)

Thanking you for any advice you may give I am enclosing stamped and directed envelope for your direct reply.

ANSWER:—It is believed that this inquiry represents a very careful and thorough consideration of the scheme of transposition. The data given is not sufficient, however, to enable me to outline definite plans until some of the other conditions that must be met are known. Will you please write me again and enclose a sketch showing the exposure that will be encountered in this proposed telephone lead? That is to say what are the conditions as to neighboring supply circuits, what is the configuration of any supply circuits that will parallel the proposed pole line, what is the voltage and what is the separation between them and the telephone line? Such a sketch need not be too elaborate but should show the length of each possibly disturbing parallel, and any such conditions as joint occupancy of the proposed pole line by other circuits (supply circuits and telegraph circuits).

Then it is to be remembered that the transpositions in the several telephone circuits must be so located as to have a definite relative location considering all transpositions in all the telephone circuits with which they are in parallel. This consideration also is concerned with the addition of new circuits on the lead in the future as accurately as they can be foretold.

Please send in the additional data with rough sketch for use in preparing a satisfactory reply to your inquiry.

Possibly some of the books that are available might be found to be of value to you in completing your transposition scheme also.

QUESTION:—*In the August* 1952 TELEPHONE ENGINEER AND MANAGEMENT *your column contained an interesting description of a simple method of spinning Ankoseal cable to messenger* (# 12 *H.T.L.*). *I have had similar success with the method but have not found an entirely satisfactory method of attaching the messenger* (# 12 *H.T.L.*) *to the poles. Can you or your friend offer a suggestion?*

ANSWER:—This inquiry cannot be answered as completely as is desirable because the file containing

Free Literature Department

New Product Literature of Practical Interest

CONNECTORS:—A new reference chart has been issued to show what is now available for aluminum and aluminum to copper connections. Designed to answer questions in the aluminum field it can be obtained from the Fargo Mfg. Co., Pougkeepsie, N. Y.

• • •

ELECTRICAL FITTINGS:—Catalog No. 52, describes manufacturer's complete line of solderless wire connectors, cable and conduit fittings and wiring devices. Contains profusely illustrated descriptive information on "pres-SURE-connectors" for solderless wire splicing and terminating, "Bushend" Insulated Conduit Bushings, Box Connectors for non-metallic sheathed cables, Conduit Locknuts, Knockout Plugs, Molded Terminal Blocks, etc. Includes complete specifications, dimensional data, application instructions and ordering information. Write Buchanan Electrical Products Corp., 225 Route 29, Hillside, New Jersey.

• • •

EXCAVATOR OPERATION:—The time tested rules of excavator and crane operation and maintenance are listed and explained along with some new slants and tips on operation, lubrication, adjustments and preventative maintenance in an illustrated, two-color booklet recently published by Bucyrus-Erie Co., South Milwaukee, Wisconsin.

Titled "Ways to Make Your Excavator Work Harder—Live Longer," the 32 page publication covers subjects close to any excavating man's purse. Copies are available on request.

• • •

HERBICIDES:—A new chart containing the latest information on chemical control of weeds and brush has been prepared by Thompson Chemical Corp., St. Louis 3, Mo. The chart furnishes data on what to spray, when to do it, and what dilution to use. It includes directions for both foliage spray and basal bark treatment.

• • •

INSULATION TESTER:—Designed to give information on all precision instruments manufactured by Associated Research Inc., 3760 West Belmont Ave., Chicago, Ill., Bulletin 10A has been released by that company. It includes basic data on "Vibrotest" for electric insulation resistance testing and "Vibroground" for ground resistance testing. Available upon request.

the original description of this method of spinning light weight Ankoseal cable is not at the vacation location where this particular reply is written. Just as soon as possible the writer of the original description will be requested to make such suggestions as may have been found to cover this point.

In general it may be said that the placing of the proper tension on the supporting messenger is the governing factor as to the method of securing the messenger to the poles. If the entire run of spun cable is short it may be possible to adjust the tension in the messenger for the entire run at one time and then the individual messenger clamps on each pole can be tightened without trouble. When the run of cable is of considerable length, however, it will probably be necessary to adjust for tension section by section. This is also true when the sections are not of approximately uniform length or are extremely long. For the two conditions it is probable that different types of messenger brackets will be required. At the moment it is suggested that the problem be submitted to the supplier of construction material with a description of the line conditions to be met. This will enable the supplier to outline definite recommendations as to the type of messenger bracket that is deemed best for use. In submitting the conditions to the supplier it is, of course, necessary to mention that the messenger is spun on the cable because the factors making for satisfactory future maintenance may be somewhat different in that case than they would be in the case of conventionally hanger supported lead covered cable. These comments are applicable also to cable that is not too large, in other words comparatively small light weight cable. In the belief that this is of general interest to the entire field of telephone communication descriptions of methods that have been found to be satisfactory will be very welcome for reproduction in QUESTIONS AND ANSWERS.

How to Solve Your Cable Spinning Problems the Easy Way

Platform Clamps
Support splicer's platform from aerial cable —spun or otherwise. Won't slide on grade or damage cable. Bronze alloy.

Handline Block,
specially designed for spun cable, may be used on cable with any other kind of support. Clamps on strand. Won't slip on grade or damage cable. No wrench is needed. Bronze alloy.

Single Eye Hooks
...for four supporting adjustable ropes of a splicer's platform. Cadmium-plated steel.

Double Eye Hooks
make splicer's platform readily adjustable ...by threading supporting ropes through double eye. Cadmium-plated steel.

Lashing Wire Clamp
designed by Neale, holds spinning wire with positive action clamp when terminating at pole. Also keeps slack from running back in cable repairs. Bronze alloy with cadmium plated screw.

Soap Can & Brush
keeps pressure testing soap or paint in excellent condition. Cast aluminum for light weight. Tight-fitting cover serves as handle for brush. Container equipped with spring belt clip.

LITTLE GIANT Slack Pullers

Here's a combination of great strength and very simple operation...to make difficult operations easy. Furnished with either slip handle (left) or ratchet (right). Moving parts cadmium plated.

Cable Placing Ring Guide Roller
offers means of pulling cable in and takes down pull on tow line to truck. Cadmium plated steel with bronze bushing.

Cable Placing Shoe
is used ahead of spinner to raise cable from reel to strand in placing and spinning cable. Also used stationary at pole when placing with rings.

Steel Placing Rings
...for light cable. Slip rings onto cable at pole and attach to pulling line. Rings distribute themselves every five feet along span. Sets of 20, including 110 feet of rope attached.

Bronze Cable Placing Ring.
Roller design eliminates sheath damage of all sizes of cable. Cast bronze body and bronze rollers.

CABLE SPINNING MANUAL
gives complete details on operation of Neale Cable Spinner with easy-to-follow service and maintenance instructions.

THE WORLD IS SPINNING—TOO!
PHONE 2-7234-5
Cable Spinning Equipment Co.
3100 TOPEKA AVE. TOPEKA, KANSAS

Sales & Purchases:

BRAINERD, MINN.—The Northwestern Bell Telephone Co is taking over three service station companies that have been operating between Brainerd and Nisswa, it was announced by E. M. Taft, manager at Brainerd.

The three companies are St. Colombo Cooperative Telephone Co., Squaw Point Rural Telephone Co., and the Hubert-Gull Lake Rural Telephone Co.

Telephone service will eventually be provided to all who want it in this area. Because of the large area involved it will take several years and around $70,000 to adequately serve the area, Taft stated.

HILLS, MINN.—K. M. Deer, owner of the Winfred (S. D.) Telephone Co., recently purchased the Hills Telephone Exchange from Fred K. Haywood.

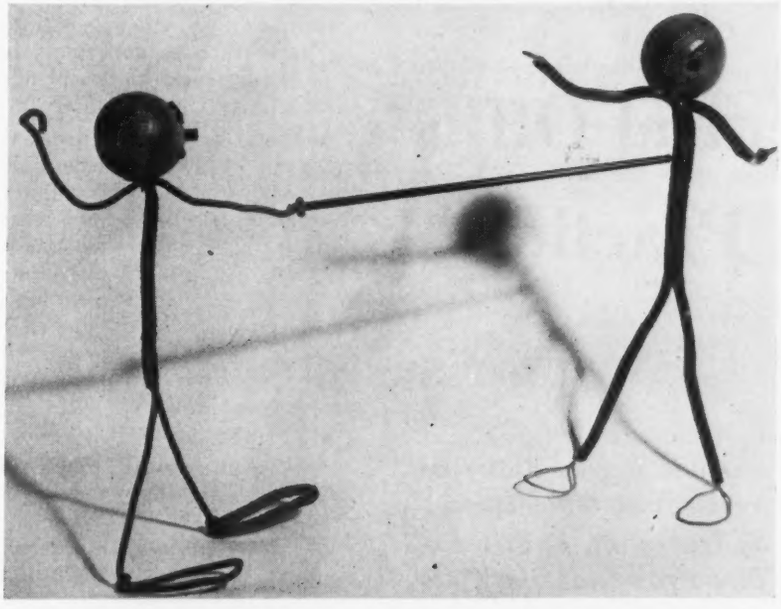
LINDSAY, WIS.—Mr. and Mrs. Walter Tank have taken over the management of the Lindsey Telephone Co. from Mr. and Mrs. Oscar Peterson, who are retiring due to ill health and moving to Marshfield.

LADYSMITH, WIS.—William Chamberlin, president and major stockholder of the Rusk County Rural Telephone Co., has announced the sale of the company to the Wisconsin Telephone Co. The Rusk County Rural Telephone Co. was founded in 1909 by T. M. Thomas, A. J. Laidlaw, Frank Stair and H. W. True, and is one of the oldest utilities in the area.

SAFETY TIPS

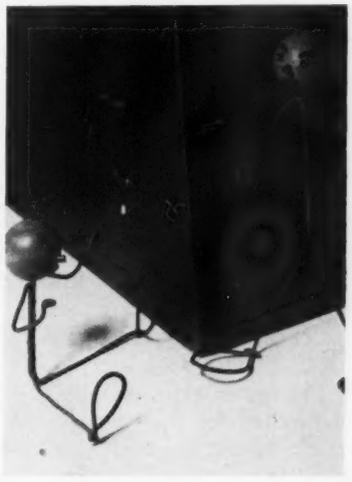
By DAVID MARKSTEIN

A door can be a near-leathal weapon if it's banged in someone's face . . . Open them slowly.



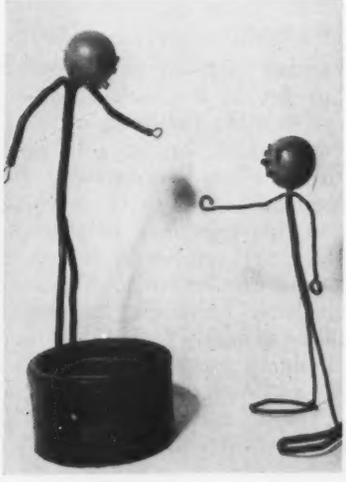
If it's sharp—don't play with it. "Touche" in play can become awfully real.

A Safety Belt is a lineman's best friend. Inspect yours for defects regularly—keep it away from sharp objects, acids and hot surfaces.



It might be wise to install periscopes at dangerous corners. Lacking these, slow up and give the other fellow a chance.

An Open desk drawer is an invitation to trouble—barked shins, fractured bone or a broken nose from a fall on the face.



Make sure the object you climb on will hold your weight and won't topple over. Safety stepladders are best.

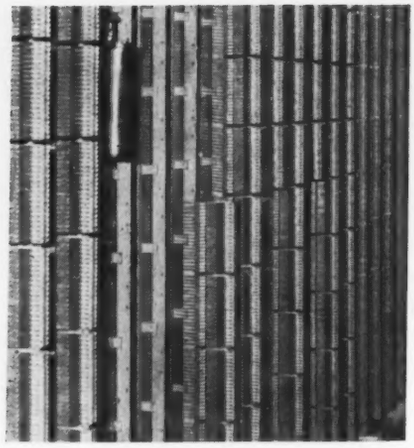


Fig. 177—Hand pump type vaporizing liquid extinguisher located on main distributing frame.

Modern Central Office Maintenance Practices

By JOHN S. REED, Lincoln, Neb.

Section XI-A of Mr. Reed's article begins a discussion of—(1) Fire Protection in Central Offices; (2) Types of Fire Extinguishers; (3) Operation of Fire Extinguishers, and (4) Planning Fire Protection for Telephone Buildings.

OF PRIME concern to the telephone company is the prevention of fire in the central office as well as in other buildings owned by the company. A fire in a telephone central office has a very serious effect on communications in the exchange area in that they may be disrupted for days or even weeks before the equipment can be replaced.

Telephone buildings, in general, should be as nearly fireproof as standard building construction will permit. In addition, fire prevention rules in regard to matters of rubbish disposal, handling and storing of inflammable materials, and the like should be enforced. However, fire prevention methods alone will not provide adequate protection for telephone property. Means for extinguishing a fire must also be furnished.

Experience has shown that most conflagrations start as a small incipient fire easily snuffed out by means of a hand or portable type extinguisher if detected in time. Obviously automatic water sprinklers are out of question in switchrooms and operating rooms and over distributing frames, since any quantity of water thrown on delicate equipment and wiring will cause far more damage than the fire itself.

In order to understand the reasons for selecting certain types of fire extinguishing equipment, let us consider classifications of fires and suitable means of extinguishing such types of fires.

The Underwriter's Laboratories classifies fires according to their occurrence in various kinds of materials and equipment as follows:

CLASS A FIRES—In ordinary combustible materials such as wood, paper, textiles, and rubbish. Fires in such materials are most effectively quenched by water or solutions composed largely of water which cool the burning material below its ignition point.

CLASS B FIRES—Inflammable liquids such as gasoline, oils, grease alcohol, naphtha, paints and varnishes. A blanket of inert gas or chemicals (foam) is needed to smother the fire. The gas greatly dilutes the oxygen content of the air surrounding the burning material while the chemical film or foam covers the material and prevents air from getting to it.

CLASS C FIRES—In electrical equipment. (This includes switchboards, relay or switching equipment, power generating equipment, and distributing frames.) Fires in this equipment require a non-conducting extinguishing agent such as vaporizing liquid or inert gas which exerts a blanketing effect and smothers the fire.

Although any type of fire may occur in a telephone exchange building especially if storerooms and offices are maintained in the same structure with the central office, telephone workers need to be on the alert for electrical fires such as that resulting from an overheated relay or motor.

Types of Fire Extinguishers in General Use

FIRE EXTINGUISHERS are classified according to the extinguishing agent used and the mode of operation as follows:

(1) Hand pump with water.
(2) Inert gas cartridge in pressure tank with water.
(3) Wet chemical generator (soda acid) with water.
(4) Foam generator with water.
(5) Dry chemical with inert gas cartridge to produce a heavy dust and gas stream.
(6) Hand pump with vaporizing liquid.
7() Pressure tank with vaporizing liquid expelled by compressed air stored in the tank.
(8) Combination carbon dioxide and vaporizing liquid extinguisher.
(9) Pressure tank with carbon dioxide gas.

The water type extinguishers are best suited for fighting class A fires which cannot be readily put out by other types of extinguishers, particularly when the fire is deep seated or smoldering. The foam and water extinguisher is also adapted for putting out flammable liquid fires. Such extinguishers are installed in offices and

Power Cross Protector

by COOK

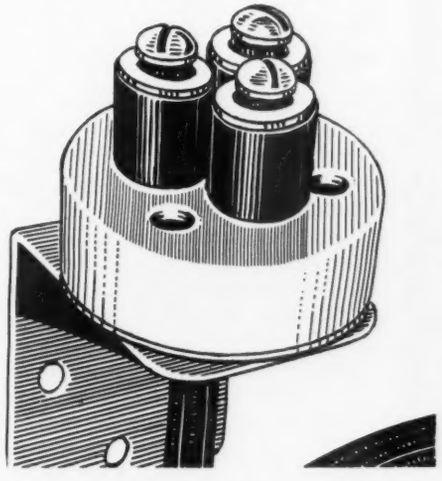
THE CONTINUED extension of the practice of joint occupancy of wood poles by communication and power circuits of higher voltages has created a need for heavy duty arresters on the communication circuits.

In the event of contact between the power and communication circuits, the arresters must be capable of carrying the fault current long enough to allow the power breakers to operate and de-energize the power circuit.

It should be remembered that a large margin between full load current and probable fault current assures rapid operation of the power breakers. Therefore, in placing these arresters the total impedance of the fault current path should be kept sufficiently low to assure a large fault current. This impedance can be lowered by reducing the regular spacing of the arresters along the line. These arresters, distributed along the telephone line, also give considerable protection from lightning damage.

The HI-CAP Power Cross Protector consists of three carbon electrodes mounted on a porcelain base and enclosed in an alloy cover, permanently clinched in place. It has three #10 B&S insulated copper wire leads and a bracket for quick easy mounting and installation on pole or crossarm. Each electrode is equipped with a fusible element which melts and further reduces the impedance of the fault current path when the fault current continues over an extensive period.

Unit with the cover removed showing porcelain base and the position of carbon electrodes.



COOK ELECTRIC Company

2700 SOUTHPORT AVENUE
CHICAGO 14, ILLINOIS

Insto-Gas
T M REG U S PAT OFF

FURNACE
For Cable Splicers

Melts 40 pounds of metal in six minutes

•

Operates in all kinds of weather

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Lights Instantly — Won't Blow Out

Also available in floor type furnace—With 50 ft. hose can be operated on splicing platform

INSTO-GAS TORCHES

These instant lighting torches are made in five sizes for all kinds of flame soldering and finishing splices.

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Listed by both Underwriters and Factory Mutuals Laboratories.

Ask your telephone distributor for Insto-Gas or send coupon for descriptive folder

TE
Send information on Insto-Gas to

NAME.....

ADDRESS.....

Insto-Gas Corporation • Detroit 7, Mich.

QUOTE

"Is the government going to go broke? Probably not this year or next, but there's no use kidding ourselves. If we keep on covering this country and most of the world with a shower of greenbacks, the bubble is going to burst and we'll all be flat broke; all monetary values of every kind and character will be entirely wiped out. Then what? Your guess is as good as mine."—*Morrison (Ill.) News.*

storerooms where quantities of paper, textiles or wood articles are present or kept in storage. These extinquishers, however, are unsafe as well as being unsuited for use on electrical fires and should not be located in the same room with electrical equipment.

The dry chemical extinguisher is effective against fires in flammable liquids and electrical power equipment. Its dry powdery nature may cause difficulty as the result of the powder lodging in contacts of delicate relay equipment, requiring careful cleaning of the equipment after a fire.

The vaporizing liquid and carbon dioxide extinguishers are adapted for fighting fires in all kinds of electrical equipment and flammable liquids. The vaporizing liquid extinguishers

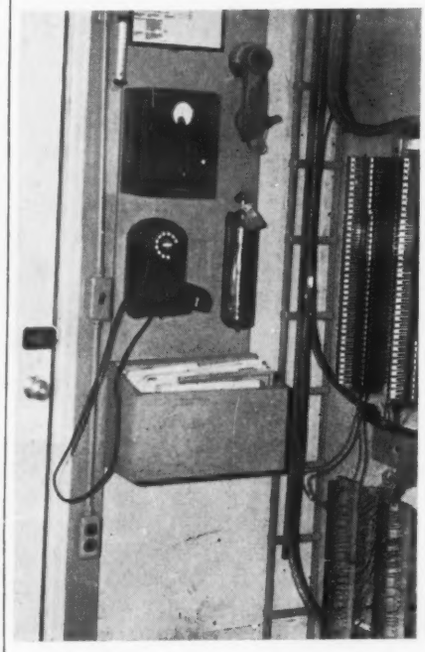

Fig. 178—Hand pump type vaporizing liquid extinguisher in unattended central office.

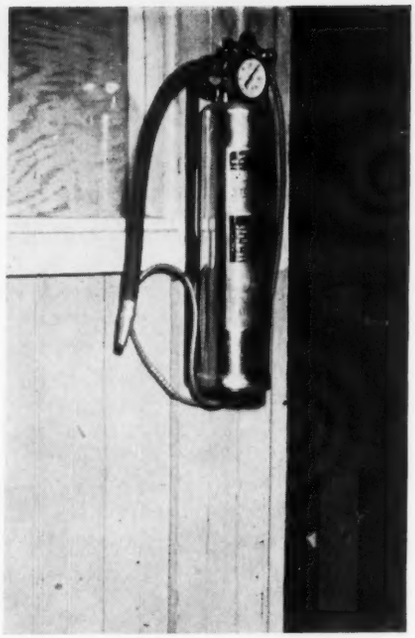

Fig. 179—Combination carbon dioxide and vaporizing liquid fire exitnguisher in storeroom. Note pressure gauge which gives a continuous indication of the state of charge in the extinguisher. The round strap is intended for carrying the extinguisher.

(*Figures* 177 and 178) can also be used on incipient class A fires provided the fire occurs indoors and is not exposed to wind which would carry off the smothering blanket of vapor.

The combination carbon dioxide and vaporizing liquid fire extinguisher shown in *Figure* 179 is very simple to operate, requiring only that the handle be turned to break the seal and release a sizzling stream of carbon dioxide and carbon tetrachloride while the hose nozzle is pointed at the base of the flames and swept from side to side. The resulting stream is 20 to 30 feet long.—(*To Be Continued in the October* FORTNIGHTLY TELEPHONE ENGINEER.)

Kentucky Co-op Signs REA Loan Contract

THE LAST BARRIER to an early start on rural telephone development in the Glasgow, Ky. area, was hurdled with signing of a REA loan contract for $1,791,000.

James Gillenwater, legal counsel for the South Central Rural Telephone Cooperative, stated that signing by co-op officials makes $1,791,000 available for start of work. The amount is $33,000 higher than the $1,758,000 which was originally allocated to the co-op on May 12 by REA.

The system serving the six-county area is to be designed by the Johnson, Depp & Quisenberry Engineering Company of Owensboro, Ky.

Cable Layout Planning & Recording

(*Continued from page* 40)

Terminal Numbering Scheme

IN ORDER that cable terminals may be properly entered in cable records and to enable any terminal to be properly located for assigning numbers or tracing a trouble case, the terminals in the exchange area are designated in one of several ways. One method is to give each terminal pole the address of the nearest house on the same side of the cable lead. Another method uses a combination of letters and numbers arranged in a way to indicate the relative position of the terminal with respect to the central office as well as its position within the city block. This system is illustrated in *Figure* 7 which shows a scheme for up to 40 blocks north and south of the office and about 130 blocks east and west.

This scheme divides the town into four sections with the dividing lines at two streets intersecting at right angles adjacent to the block in which the central office is located. The blocks north and south of the office are designated by numbers and the blocks east and west are represented by letters. Ten terminals are provided for in each block. This number of terminals may be increased by adding the suffix ½ to the numeral designations.

The numbers for the terminals in the blocks north of the division street begin at zero and are increased by ten for each block going south, while the numbers for terminals in the blocks north of this street begin at some multiple of 100, which should be at least 100 above any number occuring in the north half, and are increased by ten for each block going north. (In *Figure* 7 the highest number is taken at 400.) The last digit of the terminal number denotes the relative position of that terminal within the block.

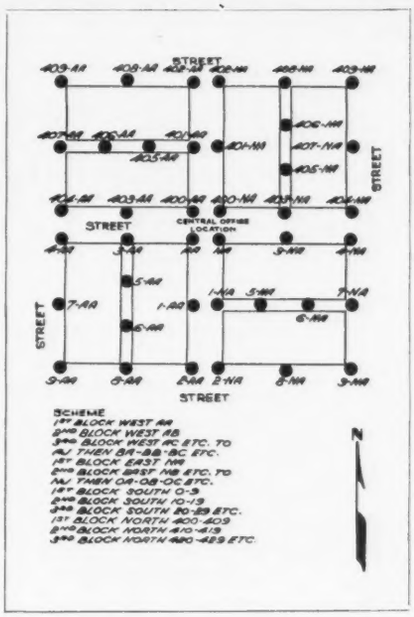

Fig. 7—Cable terminal numbering scheme.

The blocks east and west of the office, are designated by combinations of letters. The first letter of the combination denotes whether the terminal is located east or west of the office, and the combination itself indicates the number of blocks in that direction. For locations west of the office, the first letter is taken from the first half of the alphabet and for locations east of the office, the letter is taken from the last half.

Use of Cable Multiple System

A CABLE SYSTEM with every cable pair having only one termination (*Figure* 8) should be exceedingly rigid, and it would be necessary to provide an excessive number of cable pairs in order to take care of subscriber moves and additions. It would also be difficult to provide party line

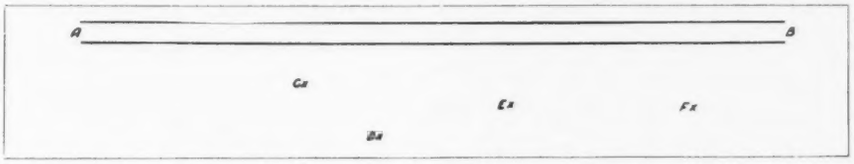

Fig. 8—Cable pair with only one termination.

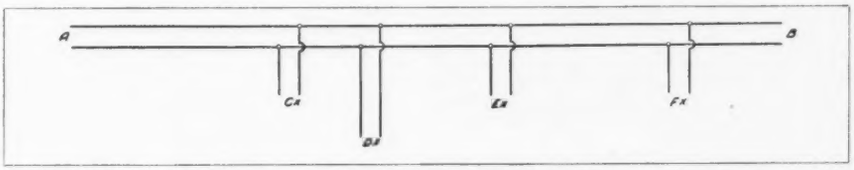

Fig. 9—Cable pair with five appearances in different terminals.

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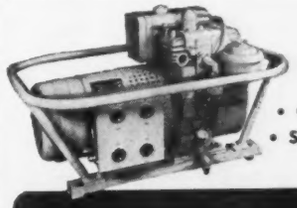
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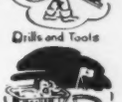
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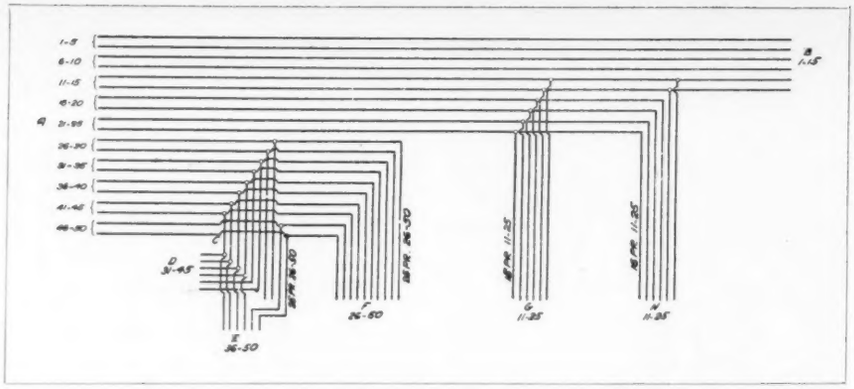

Fig. 10—Illustrating cable pair multiplying method.

service without unduly long drop wire runs, from one terminating point to the two or more party line subscribers. These disadvantages are avoided by arranging the cable pairs to have several outlets or appearances in selected terminals as shown in *Figure* 9. This method is known as cable multipling and when properly applied results in a very flexible cable count. Another advantage of this method is that it enables the feeder cable to be worked to nearly its maximum fill.

As an example of how a cable multiple is set up, consider the diagram in *Figure* 10, which represents a 51-pair main cable with laterals and terminals. Point "A" represents the main distributing frame in the central office where the cable terminates. At point "C" is the first lateral or branch cable to be spliced into the main cable. This is a 26-pair cable that has each pair multipled with a pair in the main cable between rack (main frame) numbers 26 to 50.

At point "D" this 26-pair lateral reduces in size and a 16-pair cable splices into it on pairs 26 to 50, terminating at "E" in a 16-pair terminal. Pairs 31 to 35 of the 26-pair cable end in a terminal at "D" and pairs 36 to 45 appear in the same terminal by the multipling method without actually terminating there.

The next lateral is at point "F" where pairs 26 to 50 connect to a 26-pair cable that end in a 26-pair terminal. At "G" pairs 11 to 25 multiple into a 16-pair lateral cable to a 16-pair terminal. At "H" the main cable reduces in size and pairs 11 to 25 terminate in a 16-pair terminal. Finally pairs 1 to 15 of the main cable end at "B" in a 16-pair terminal.

Figure 11 illustrates how the cable pair count is made in the cable multiple arrangement just described. Due to the overlapping of the count of the various terminals, the sum of the pairs in the laterals exceeds the number of pairs in the main cable.

Cable Record

WHEN A CABLE system is established, a method of connecting subscriber's numbers, main frame numbers, and cable pairs is needed. The cable record illustrated in *Figure* 11 shows how this is accomplished. The record indicates what cable pairs are in use and in which terminals the subscribers lines are connected.

The sample cable record illustrated is associated with the cable plat shown in *Figure* 12. It will be noted that the record indicates that the main cable consists of 50 pairs which are connected to main frame numbers 1 to 50 listed under the column headed "Rack Numbers". The switchboard numbers to which the rack numbers are connected are shown in the column under "Sub's. Numbers".

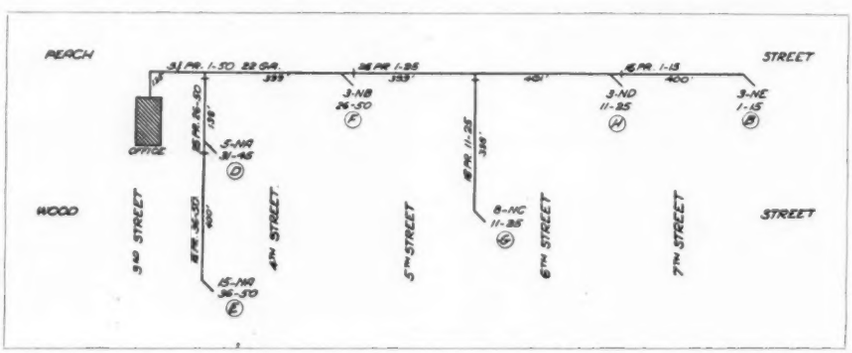

Fig. 12—Cable plat associated with cable record shown in Figure. 11.

Associated with the switchboard numbers are outside terminals in the column headed "Ter." The number of stations and class of service are indicated in the columns at the left of the row of column headed "Subscribers Numbers and Terminal Feed."

In the left hand portion of the record are listed the terminals, cable pairs, and page code numbers, the last relating the terminal numbers to the cable pairs. The terminals and cable pairs are entered in the same order as their rack numbers. This arrangement of cable pairs in terminals clearly shows which pairs are multipled and which subscribers numbers are associated with the rack number, cable pairs and terminal numbers.

To avoid using up vacant pairs too fast, assignments of cable pairs to new subscribers should be made in that part of the terminal that has the least multiple with other terminals. As soon as the subscriber gives his order for service, the proper unused pair should at once be assigned to him to prevent the possibility of some other subscriber getting this pair if there is any delay in installation of the first subscriber's telephone.

Subscriber's number and terminal feed entries are made with hard pencil (to prevent smudging of the record). Entries of terminal location and cable pairs are typed or written in ink as these entries are permanent.

Conclusion

FOR SUCCESSFUL operation of a cable system, the degree and direction of the town growth should be observed and the cable record should be studied from time to time so that cable relief can be provided when it is needed. In large exchanges this study is almost a continuous process. —THE END.

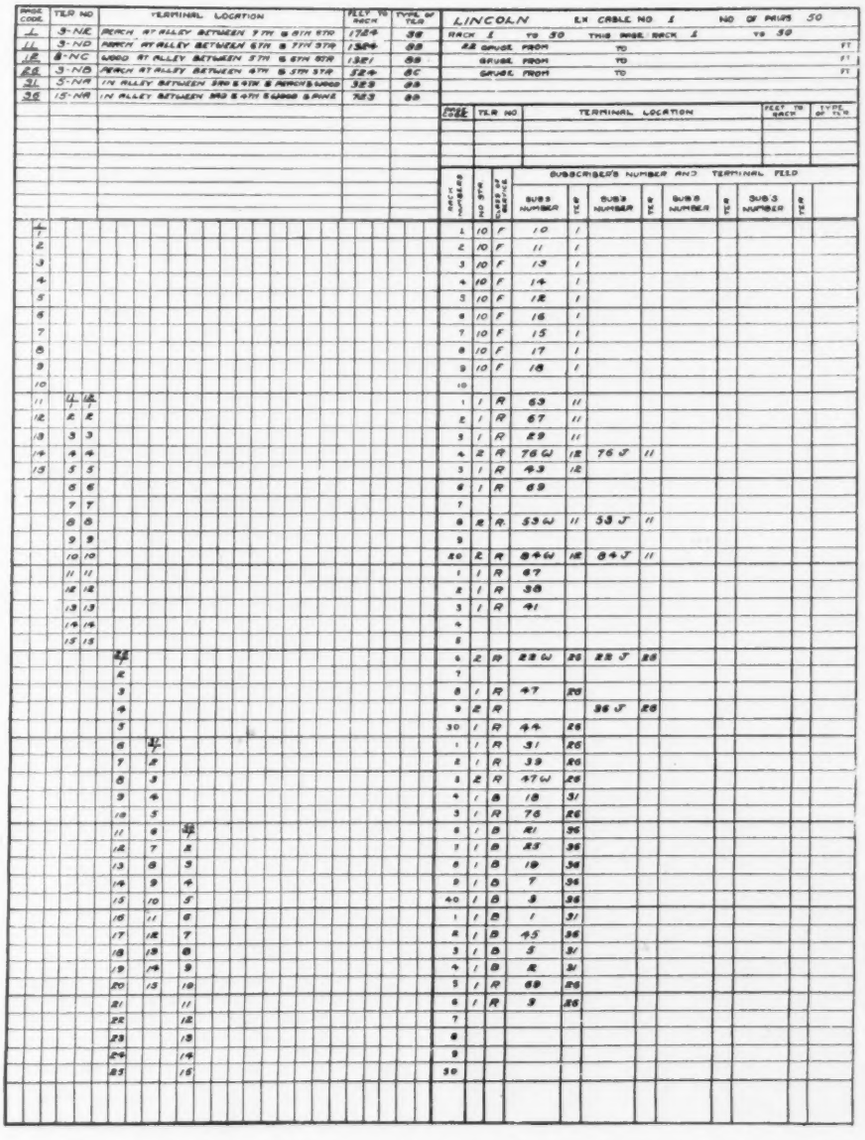

Fig. 11—Sample cable record showing cable count and method of entering subscriber's numbers, rack numbers, and pair numbers.

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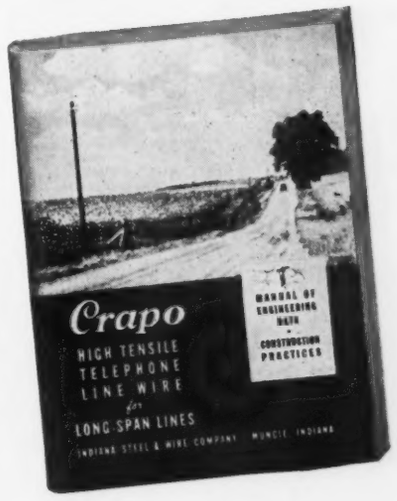

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Maintenance of Open-Wire Line

(*Continued from page 43*)

***8700 volts to 50,000 volts over telephone wires....	6 feet
over telephone guys	4 feet
Power guys over and under telephone wires and guys..	2 feet

*Voltage to ground, applies only where primary neutral is not involved, the power wires cross over the telephone wires, and the crossing is not within 6 feet of any pole.

**At locations where power wires cross over telephone wires within 6 feet horizontally of a telephone pole, increase this separation to 6 feet.

***Over 50,000 volts, the minimum clearances shall be increased at the rate of 0.5 inch for each 1000 volts of the excess.

The basic minimum clearances are for overhead crossing spans of power lines of the following maximum lengths: 175 feet in heavy loading, 250 feet in medium loading, and 350 feet in light loading districts. If the overhead crossing span exceeds these maximum lengths, the basic clearances must be increased, unless the power company locates the nearer pole of the upper crossing span near the crossing point of the power and telephone lines, as illustrated in *Figure* 4.

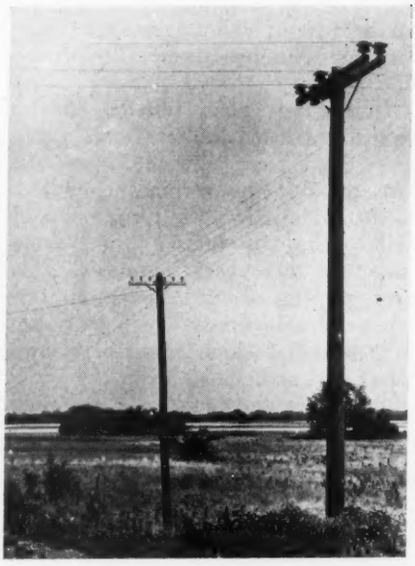

Fig. 4—The location of the power transmission pole close to the crossing over the telephone lead and adequate clearance between the wires at the crossing are a guarantee of freedom from contact trouble.

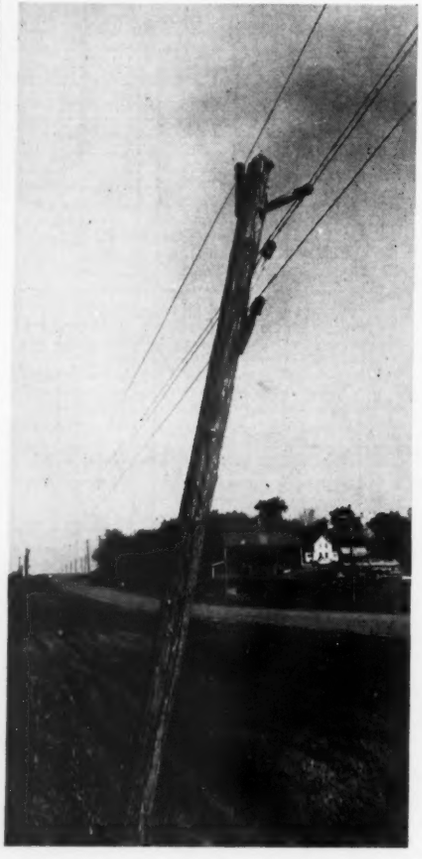

Fig. 5—This pole has a badly decayed surface and should be replaced as soon as possible.

The foregoing clearance requirements are based on the National Electrical Safety Code. A few states, however, may have requirements more stringent than the above. In case of doubt, the proper state authorities should be consulted for their requirements.

If clearances from the ground or other foreign wires are inadequate, it is possible to correct this condition in many cases by relocating the attachments higher or lower on the pole, reducing spacings between crossarms or brackets, placing intermediate poles to reduce wire sag, or using taller or shorter poles to replace poles of improper length for the clearance. If none of these methods can be employed to obtain the needed clearance, particularly where power wires are involved, the power company should be contacted for rearrangement of their own wires or attachments to increase the clearance.

Inspecting And Testing Poles

POLES DO NOT require inspection within the first 10 to 15 years, depending on the kind of timber from which the poles were cut and the completeness of the preservative treatment used on the poles. After this period, there may be an occasion-

(*Please turn to page 70*)

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al pole that is starting to deteriorate and it is then well to check all poles to find the ones that are going bad. After the first inspection, it is usually sufficient to recheck the poles once every two or three biennial inspection periods.

On light rural lines, a detailed inspection of every pole would be a waste of time. When the lead consists of not more than ten wires, it is sufficient to apply a pike pole test. In this case, the pike pole is placed at an angle of 45 degrees to the line pole at the center of the wire load and a steady push is applied. One man can apply enough force to test the pole if the latter carries up to six wires, but two men are needed when there are more than that number up to ten wires. The ground should be firm enough to hold the pole, otherwise a misleading test will result. If the pole does not crack or break under the applied force, it may be considered sound enough to last at least until the next inspection in about five years.

By this method it is possible to accurately check the condition of a large number of poles in one day and thus save considerable time and expense. Of course, it is not practicable to test guyed poles and poles carrying more than ten wires. Rather, these poles should be carefully examined for the following conditions:

(1)—Lightning or storm damage weakening the pole to a serious extent.

(2)—Excessive checking of the pole which may denote splitting, particularly near the top.

(3)—Extremely rough over most of the pole surface due to sapwood decay, as indicated in *Figure* 5.

(4)—Loss of more than one-quarter of the pole cross section due to woodpecker damage.

(5)—Decay pockets or hollow heart (detected by sounding with a hammer).

It is not considered a good practice to reset poles with decayed butts, for the reason that it is necessary to cut off the decayed part. This makes the pole shorter and may reduce the ground clearance for the wires below the permissible limit. In addition, sawing off the butt leaves an exposed end which is not protected by the pole preservative and may cause a hollow heart.

Stubbing poles is better than re-

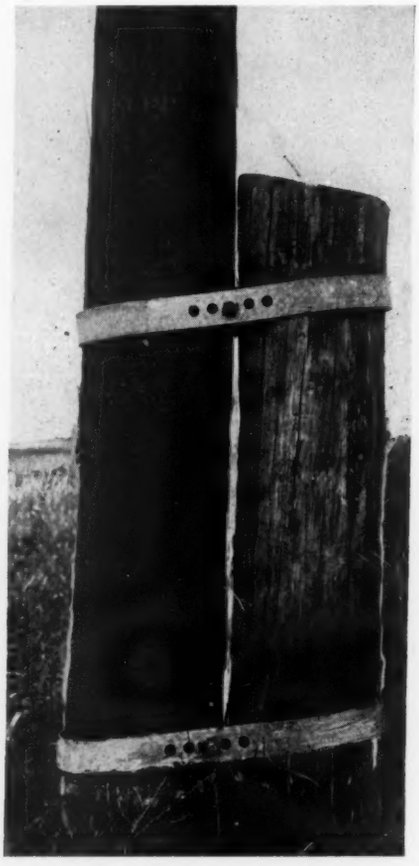

Fig. 6—An excellent pole stubbing job can be done with patent stubbing bands.

"It's Your Money They're Spending . . ."

In January a committee of the House, headed by John Bell Williams of Mississippi, reported on its investigaton of "Employe Utilization in the Executive Departments." In numerous sample agencies, among the hundreds of employes whose only job was to make out purchase orders, it was found that the average "work load" was two orders per worker per day. A large percentage of the purchases were for less than $20 each. The cost of putting through each purchase order averaged, in the Treasury Department, $7.06; in the Bureau of the Mint, the cost was $13.98; and in the U.S. Coast Guard, $23.94. In the Interior Department the average cost was $9.95 per order. Records of the National Park Service showed that one copy of a 50-cent magazine, with procurement charges added, had cost the taxpayers $13.89. To the purchase price of $2.45 worth of drinking cups for the Bureau of Reclamation, the "administrative cost" added $17.35. In one large quantity of purchases for the Office of Education, investigators found that overhead added 33 percent to the cost of each item purchased.

• • •

Estimates of what the United States has spent in Europe since the end of World War II run all the way from $30,000,000,000 to $93,000,000,000. Statisticians say it's hard to make an exact estimate because each Federal agency has a different way of keeping books.

The money the Federal government intends to spend this fiscal year amounts to more than $30 a week for every family in the United States, according to The Republican, published in Millville, N. J.

The present-day Federal budget provides enough money to run the government for nearly a generation on the 1932 scale, according to Rep. Fred E. Busbey, of Illinois.

President Hoover's last budget message proposed expenditures of $4,000,000,000, Mr. Busbey recalled. President Truman's 1952 budget calls for spending more than $68,000,000,000. Commenting on Mr. Truman's "challenge" to Congress to cut the budget if it could, Mr. Busbey said:

"The Administration's new commandment is: 'Thou shalt not touch my budget.'"

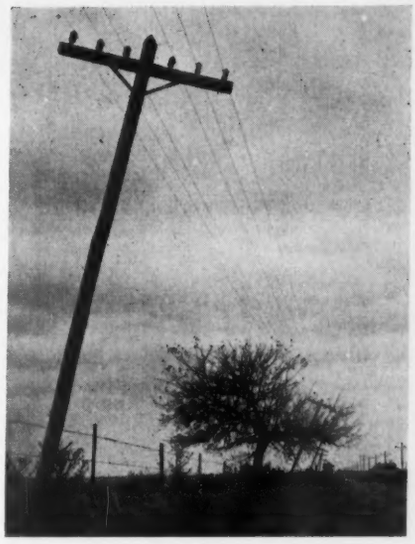

Fig. 7—If permission cannot be obtained to remove the tree, it is preferable to place side arms on the pole rather than rake the poles to an excessive degree.

setting them, but this method should be restricted to situations where the right size and kind of pole is not readily available for a badly needed replacement, or it is necessary to raise a good pole a couple of feet to obtain clearance for the wires and it would be uneconomical to replace the pole with a taller one. A fully treated stub pole at least 10 feet long and having a butt diameter equal to that of the pole to be stubbed, should be selected. It is preferable to use patent stubbing bands (*Figure* 6) which will do a better and quicker job than heavy construction wire.

General Appearance of Open-Wire Lead

POLES IN AN open wire lead should not lean to a considerable extent. Besides being unsightly, slanting poles put a strain on the wires and insulator ties, and are unsafe to climb and work on. A good rule for judging the permissible degree of pole lean is to allow not more than 1 foot slant in 10 feet of pole height in leads of six wires or less, or more

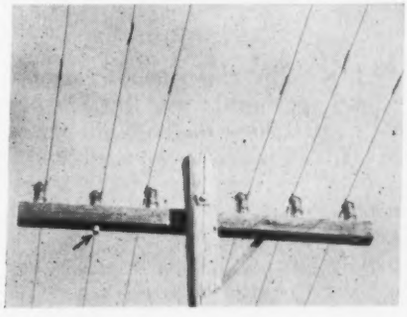

Fig. 8—A pin protruding out of the bottom of a crossarm is a sure indication of pin hole rot.

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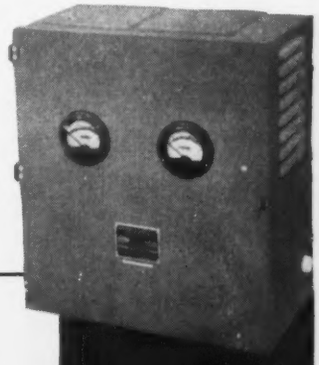

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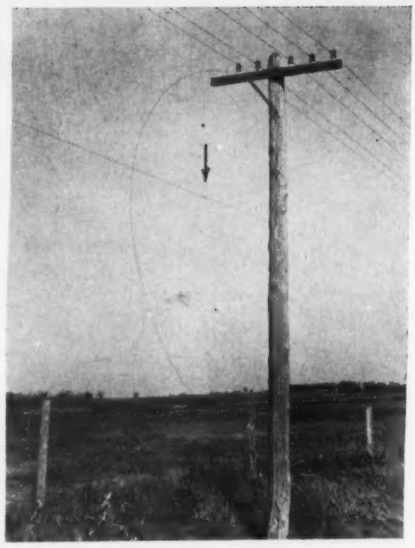


Fig. 9—The end pin came out quite likely because of a vertical split in the end of the crossarm and then the insulator and pin dropped off the arm.

than 1 foot in 15 feet where the pole carries more than six wires. In situations where poles are raked out of line to allow clearance for the line wires from trees and brush, a little more lean may be allowed. An excessive rake merely for clearance purposes as in *Figure* 7 is undesirable, when other methods of obtaining the needed clearance can be employed.

Guyed corner poles that lean considerably in the direction of the pull of the line wires obviously are not adequately anchored. If the lean is greater than 3 feet at the top, or it is evident that the leaning is a continuing process, the pole should be straightened even if the wires have

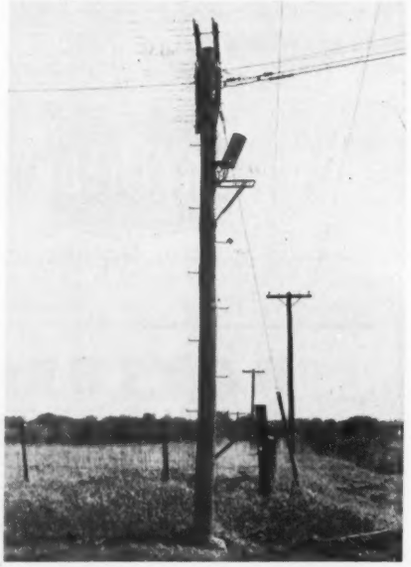


Fig. 10—The mounting screws on this terminal need refastening to straighten the terminal. Note use of guy guard for pole guy in unprotected location.

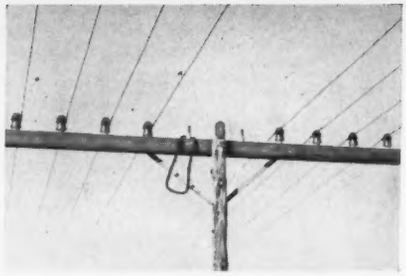


Fig. 11—Debris found on open wire should be removed to prevent possible service trouble.

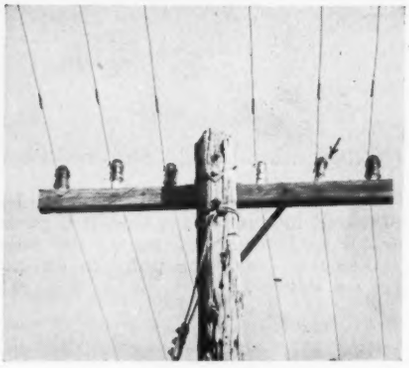


Fig. 12—Arrow points to broken insulator which should be replaced.

to be untied and short pieces have to be spliced in to enable this to be done. Inadequate anchors and guys should be replaced with heavier anchors and guys.

Leaning dead end poles are quite likely to have insufficient anchors and guys which require replacing. The pole will also have to be straightened. A slipped guy at a junction pole where two guys are used, one in the direction of the cable and the other in the direction of the open wire, may cause excessive strain on the bare wires or the cable.

If it is found that poles in straight sections of the line will lean to one side or the other in spite of all the restraightening work, they will have to be ground braced. In light leads, it may be sufficient to dig a trench on the leaning side of the pole and lay a creosoted log up close against the pole to keep it from leaning back again. A pole jack or truck winch may be used to straighten leaning poles.

When wire clearances from the ground are insufficient, this may be due to stretching of the wires under ice loads in which case the slack will have to be taken out of the wires. In other cases, a driveway may have been opened into the field from the road, requiring setting another pole in order to raise the wires higher, or one of the poles may have been moved to a different location, causing an excessively long span. This

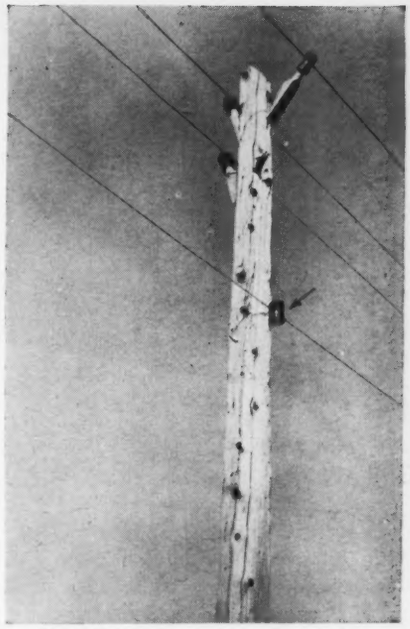


Fig. 13—Floating insulator due to loss of pole bracket.

would require setting another pole in the middle of the span, or replacing the short pole with a taller one, in order to obtain the desired clearance.

Slack or broken guys are another cause of excessive wire sag. They also result in excessive stress on the pole from the wire load and it may break under storm or ice loads. These guys will require pulling up with block and tackle, chain hoists or wire pullers. Before being tightened, the guys should be examined for damage or corrosion which might render them unfit for use.

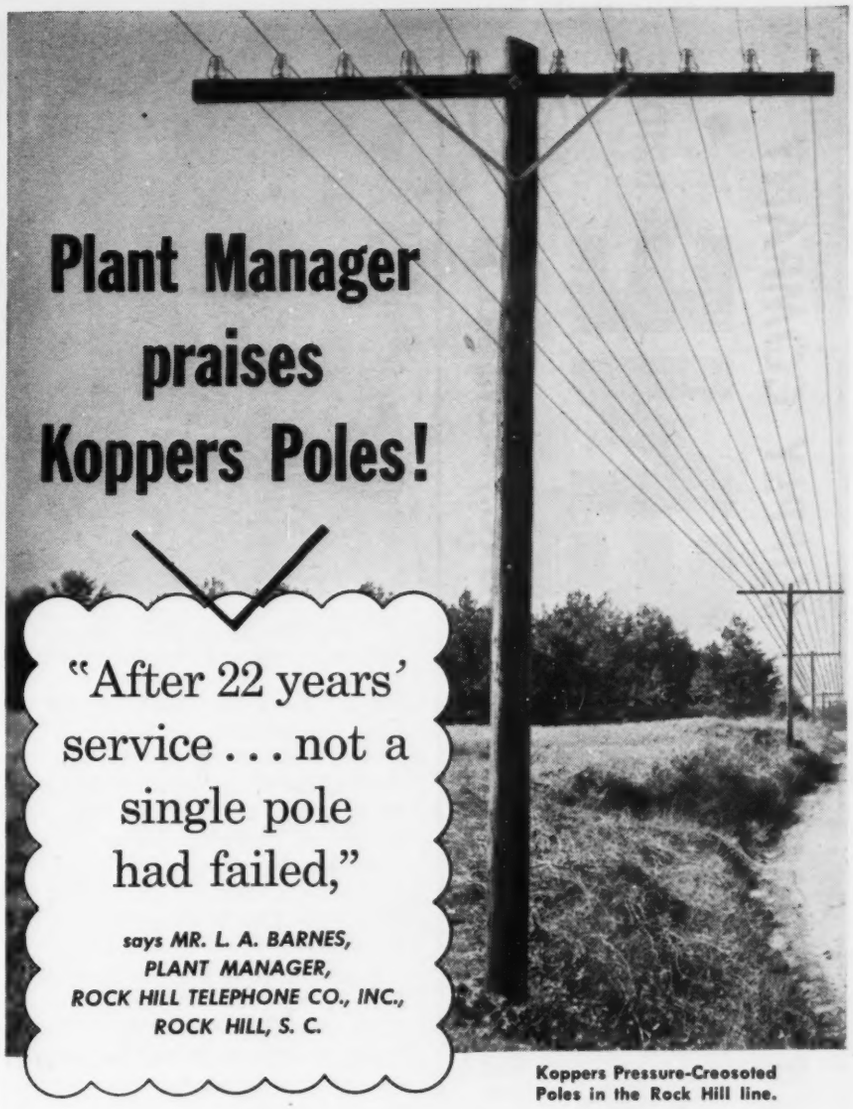
Unprotected guys can be a serious cause of trouble if they are located where people or livestock might run into them, as in farm yards or pastures. In some locations where appearance is a factor, it is desirable to place manufactured wood or metal guy guards as in *Figure* 10. In other locations it is satisfactory to use a discarded crossarm (with the pins sawed off) or the split half of a small diameter pole about ten feet long. This is lashed to the guy with wire, preferably on the underside where the guard will stay put and not slip to one side.

Pole Attachments

DECAYED OR split crossarms should be replaced. A decayed crossarm is generally denoted by settling of the insulators on the arm, due to sinking of the pin shoulders into the softened wood caused by water accumulating inside the pin holes and facilitating decay. *Figure* 8 illustrated this settling effect.

Splitting of crossarms at the ends

(*Please turn to page* 74)


Plant Manager praises Koppers Poles!
"After 22 years' service . . . not a single pole had failed,"
says MR. L. A. BARNES, PLANT MANAGER, ROCK HILL TELEPHONE CO., INC., ROCK HILL, S. C.

Koppers Pressure-Creosoted Poles in the Rock Hill line.

BACK IN 1930, the Rock Hill Telephone Company purchased and erected, in their Rock Hill-Lancaster toll line, a quantity of Koppers Pressure-Creosoted Poles. After 22 years' service, an inspection was made jointly by the telephone company and Koppers Company, and it was found that not a single pole had failed due to deterioration.

Judging from the many cases histories in our files, this company will get many more years of use from their Koppers Poles. With Koppers Pressure-Creosoted Poles, it's not just a question of getting *long* service . . . users get *trouble-free* service, too. This makes line operation better, easier, more economical.

Specify Koppers Full-Length Pressure-Creosoted Poles. You'll find that, through the years, these poles *stay* sound and serviceable.

KOPPERS COMPANY, INC.
PITTSBURGH 19, PA.

KOPPERS PRESSURE-CREOSOTED WOOD

DISTRIBUTED BY KELLOGG SWITCHBOARD AND SUPPLY COMPANY
ENDURPRENE
DROP • BRIDLE •
MANUFACTURED BY GENERAL INSULATED WIRE WORKS, INC., PROVIDENCE, R.I.

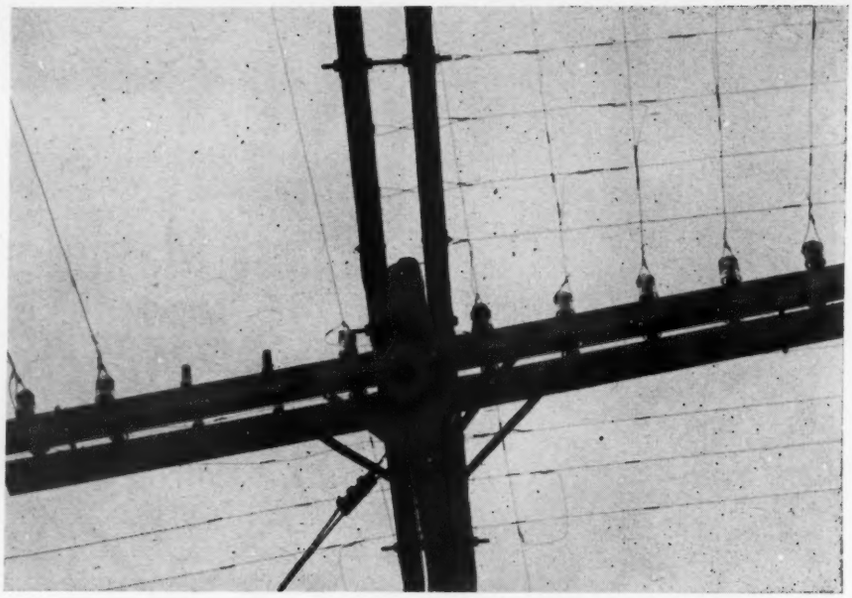


Fig. 14—Steel wire jumpers are preferable to bridle wire at buckarm corners to reduce lightning damage.

can be stopped by applying a metal strap around the split end. It is important to prevent this splitting or else replace the crossarm with a good one. End splits are a common cause of the end insulators falling out and dropping the wire at inside corners as shown in *Figure* 9 or shorting the line conductors at outside corners in the lead.

Insulator pins that have worn or stripped threads will cause floating insulators and should be replaced. The pins should always be securely nailed in the crossarm, otherwise they may come out.

Decayed or damaged brackets need replacement. If the bracket is in good condition, but is loose, it should be renailed. In some cases, this cannot be done due to nail holes becoming enlarged, and the bracket should be relocated a little to one side or above or below the original location for secure fastening to the pole.

At terminal poles where open wires connect to cable, the terminal may require refastening to the pole due to the lag screws loosening as indicated in *Figure* 10. The terminal itself should be cleaned out to remove debris and spider webs. If the terminal cover is rusty, further corrosion can be prevented by painting it with aluminum paint. Protector blocks should be examined and missing or burned blocks replaced. Dirty blocks should be cleaned to avoid noising up the lines.

The wiring between the line wires and the terminal should be inspected for wear or damage and defective wires replaced. The wire should be arranged to run neatly in bridle rings to the terminal entrance.

Debris on Wires—Line Wires, Insulators, and Trees

OPEN WIRES will accumulate debris as weeds, broken branches, baling wire, and other odds and ends from highways and fields (*Figure* 11). Such items can cause trouble and should be removed whenever found. If the debris is out in the span and cannot be reached from the pole, it may be possible to knock the debris off by vibrating the wires. In this case the wires are snapped, or held down with one hand and pounded with the other to cause the objects to jump off. If this method does not work, the alternative is to throw a handline over the wires and pull the debris over to the nearest pole where it can be taken off. A tree pruner can be used to cut up a branch tangled in the wires and then lift the pieces off. In extreme cases, the wires may have to be untied or cut and lowered to the ground in order to remove the unwanted objects.

As examined from the pole and the ground, the line wires should not be badly pitted by rust and should not show kinks or nicks, or tie wire "burns." Badly rusted wire should be replaced with new or good used wire. Bad or obsolete splices should be cut out and wire respliced with standard compression type sleaves. Hand connections must not be permitted and should be replaced with compression sleaves whenever found. It is desirable to avoid having too many splices in the same wire. Whenever two or more splices are found to be within 25 feet of the location for another splice, the general practice is to take

out the section of wire with the splices and use new wire, so as to have no more than two splices within this length.

Broken or missing insulators (*Figure* 12) should be replaced whenever found. A cracked or broken insulator reduces the line insulation and can cause line unbalance due to leakage. When a "floating" insulator (*Figure* 13) is noted, it is well to examine the insulator pin or bracket for stripped or damaged threads.

Broken insulators are quite common in locations where children congregate as when the lead passes through or past school yards, or where hunters are frequent. A successful remedy is to use rubber insulators in such locations. Although they cost more than regular glass insulators, they will effectively discourage attempts at malicious damage. Stones bounce off them and bullets only go through them in an unspectacular and harmless manner.

Broken or missing ties should be replaced. If loose ties are found, they should be retied. A standard tie should be employed to avoid wire "burns".

At crossarm corners and spur lines, bridle wires should be examined for lightning damage and defective wire replaced. Where lightning damage is frequent, it is preferable to use steel wire jumpers, as in *Figure* 14 or, if insulation is needed, No. 14 bridle wire should be substituted for the usual 20 gauge wire.—THE END.

"It Takes Three . . ."

(*Continued from page* 46)

facilitate wiping of lead sleeves over splices in the cable.

The Ankoseal cable is a well known and popular product with plant men in the independent telephone industry. The cable intended for aerial or duct service is composed of a core of polyethylene insulated copper conductors wrapped with paper, overlaid with .004" aluminum tape, and jacketed with a tough coat of black or gray plasticized polyvinyl chloride. The cable designed for direct burial has, for additional protection, double 3S flat aluminum alloy tapes butt lapped and stagger jointed followed by a second overall jacket of polyvinyl chloride. This cable is presently available in conductor sizes 19, 22, and 24 gauge, and in number of pairs from 11 up to 404.

The polyvinyl jacketed cables have a number of advantages. They are lighter in weight than lead-covered

(*Please turn to page* 78)

"Cousin Tim's ground line was a disgrace!"

(Cissie Cleanpole's stories of the grim days B.P.)*

"Cousin Tim should be a lesson to us all! Straight and tall and handsome he was, with the jauntiest crossarms on the line. But my dear, his ground line!

"No one noticed for a long time how he was rotting away down there. But it grew worse and worse, until even his friends were talking. Before the end, he had wasted away at the ground line until he was no bigger than a fence post! My mother used to cry when she told of him. It was before the days of PENTA, of course . . ."

**B.P.—Before PENTA*

PENTA gives clean, positive protection

Cousin Tim's ground line—and his whole length, above and below the ground—would have remained staunch and true if he had been treated with PENTA Preservative.

PENTAchlorophenol, the *clean* chemical formula so easy on the men who climb the poles, guards danger areas like a hawk. And PENTA is not only constant and uniform in its properties—it's powerful!

Poles treated with deep-penetrating PENTA are protected scientifically from the hazards of shell rot, top rot, ground line decay and insect damage. Yet PENTA's *clean* protection for your poles costs no more than other types of wood preservation. For names of companies supplying PENTA-protected poles and crossarms, write:

CHAPMAN CHEMICAL COMPANY

Dermon Building, Memphis 3, Tenn.

CHAPMAN

Penta Preservative

Conforming to A.W.P.A. Specifications P8-49 and P9-49

ONE OF THE HEART-WARMING JOBS FOR TELEPHONE PEOPLE

Telephony is so much more than just a business. To service men and their families, for example, a talk by telephone is next best thing to being together at home. Telephone companies everywhere recognize this and have provided more than 100 special telephone centers at army camps and naval stations.

Millions of families learn of this special service for their sons and daughters through advertisements like the one on the opposite page, appearing in national magazines for September.

THE TELEPHONE CENTER at Camp Gordon, Georgia. This is one of more than a hundred such centers at the principal military camps and naval bases throughout the United States. They are provided by the telephone companies to assist service men and women with their Long Distance calls.

They're Home Again by Telephone

"Hello, Mom! I'm OK." These are precious, priceless words—spoken thousands of times a day by our men in uniform.

Wherever they go or whatever they do, the telephone is their link with home. Over it go the voices of loved ones, the cry of a baby, the news that all is well.

That's why providing attractive, comfortable telephone centers at army camps and naval bases is such an important and heart-warming part of the work of the Bell System.

We like to have soldiers say, as one did recently—"It makes a guy feel good to know he can call home and be treated nice while doing it."

BELL TELEPHONE SYSTEM

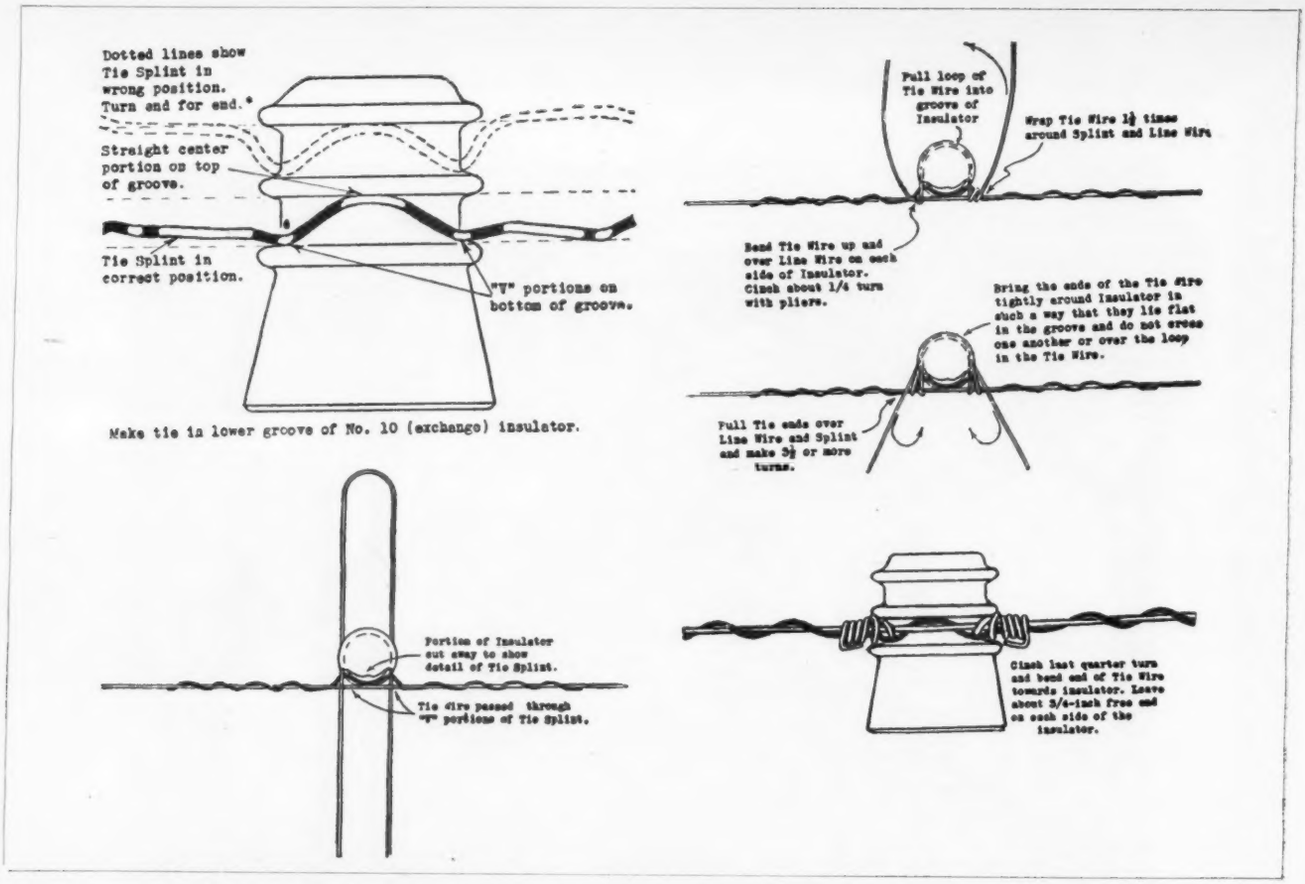

Dotted lines show Tie Splint in wrong position. Turn end for end.
Straight center portion on top of groove.
Tie Splint in correct position.
"V" portions on bottom of groove.
Make tie in lower groove of No. 10 (exchange) insulator.
Pull loop of Tie Wire into groove of Insulator
Wrap Tie Wire 1½ times around Splint and Line Wire
Bend Tie Wire up and over Line Wire on each side of Insulator. Cinch about 1/4 turn with pliers.
Bring the ends of the Tie Wire tightly around Insulator in such a way that they lie flat in the groove and do not cross one another or over the loop in the Tie Wire.
Pull Tie ends over Line Wire and Splint and make 3½ or more turns.
Portion of Insulator cut away to show detail of Tie Splint.
Tie Wire passed through "V" portions of Tie Splint.
Cinch last quarter turn and bend end of Tie Wire towards insulator. Leave about 3/4-inch free end on each side of the insulator.

Fig. 5—How tie splints are used in reinforcing line wires in long span construction.

ACORN INSULATED WIRE

Quality WIRE for Every Telephone NEED

DROP WIRE
BRIDLE
SWITCHBOARD
TREE
GROUND
BURIED WIRE

INTERIOR
POTHEAD
CABLE TERMINAL
INSTRUMENT
FIXTURE
PLASTIC INSULATED

ACORN INSULATED WIRE COMPANY, INC.
36 Freeman St., Pawtucket, Rhode Island
LEICH SALES CORP., 427 W. Randolph St., Chicago
LINDSAY TELEPHONE SUPPLY CO., 7016 Euclid Ave.
Cleveland, Ohio

ACORN'S exclusive Carton packaging preserves carefully developed QUALITY until installed . . .

Drop Wire—Bridle—Interior—Tree—Ground—Switchboard—Pothead—Cable Terminal—Instrument—Fixture—Buried Wire

cables by 10 to 50 per cent and are free from troubles inherent to the latter, such development of cracks, crystallization of the sheath, and absorption of moisture in case of being cut. When used in duct runs or buried directly in the ground, they are not subject to electrolysis which can seriously damage lead-covered cable.

For aerial service, plastic jacketed cables can be installed in the same manner as ordinary lead covered cable; that is, they can be laid in

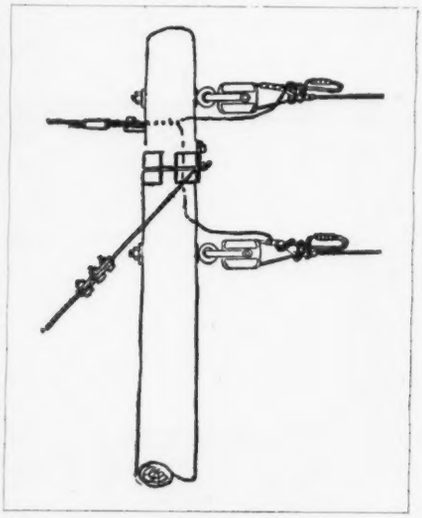


Fig. 4—Dead ending in long span construction.

cable rings on suspension strand, or (preferably) lashed to the strand with spinner equipment. A typical lashed Ankoseal cable installation is illustrated in *Figure 6.*

While splices can be made in Ankoseal cable by following the manufacturer's directions, it is more economical to avoid making terminal stub splices by using a Neale strand suspended terminal or a pole mounted terminal such as the one illustrated in *Figures* 7 and 8. In this case the cable is looped into the terminal and out again, thus saving the trouble and expense of splicing lead-covered stubs to plastic jacketed cable.

Value of a Well-Planned Maintenance Program

WHEN THE outside plant has been recently rebuilt and is in satisfactory shape, it will not require regular inspection for a few years to check its condition. At first there will be only an occasional repair or replacement of a minor plant item, such as a broken insulator or a slack wire. Eventually, the plant deterioration reaches the point where a regular maintenance program will have to be initiated to stop further deterioration.

In a program of this kind, there are two courses of action that should be taken. One involves the training of plant workers to look for and correct unsatisfactory plant conditions in the course of their daily work. Whenever a worker is unable to make a needed repair or replacement because he does not have the equipment to do the work, or for other reasons, he should arrange to have the work done by other men or at some other time. Every job that is postponed for any reason should be written down on a memo form. This precaution will prevent such jobs from being forgotten in the press of other work.

The second course of action involves the inspection of the outside plant at periodic intervals for the purpose of detecting and correcting trouble while it is still in the incipient stage, before it causes a service interruption. Since tree trimming work for overhead line clearance is generally handled in cycles of two years, the inspection program should be conducted on the same basis. This inspection could start from the central office and include all cable plant in town as well as the subscribers' drops and open-wire extensions. When this work is completed, the inspection of the rural leads starting from their junction with the cable to the office and going to the end of each lead may then be handled. All farm spurs and drops to farm residences should be included in the inspection.

The size and number of exchanges involved may be such as to require spreading the inspection work over

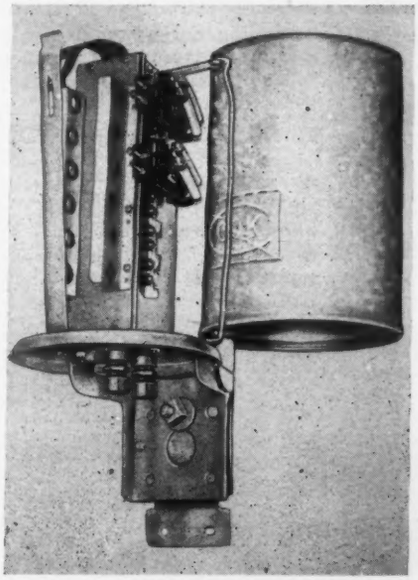


Fig. 7—Cook cable terminal designed for terminating plastic sheathed cable.

now!

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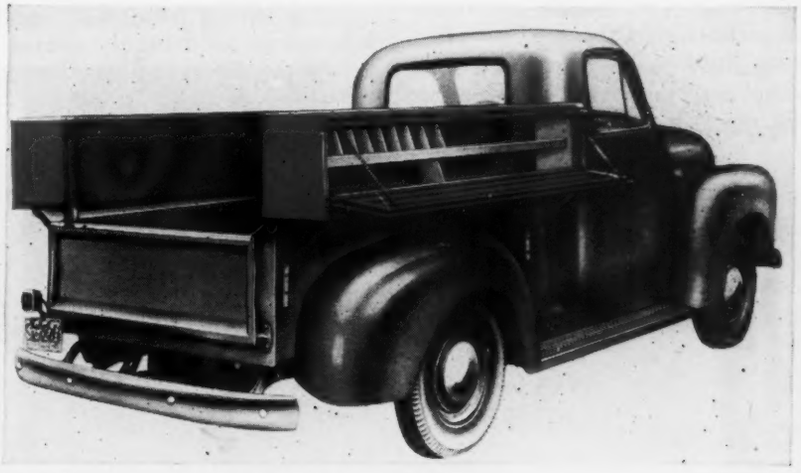

...TO A MODERN SERVICE TRUCK!

It's easy. It's quick — COSTS LESS THAN YOU THINK. CRAFTSMAN Side Boxes give you "carrying space" for your Tools, Parts, Supplies, Equipment. Anyone can mount them. Bolts and brackets furnished. They're all-steel, welded, weather-tight — built to outlast your truck! 75", 85" and 96" lengths fit ALL Pick-Up-Trucks — ½-ton, ¾-ton and 1-ton models. Available with Pipe Carrier Brackets, Ladder Racks, etc.

WRITE NOW FOR PRICES AND SPECIFICATIONS

STAHL METAL PRODUCTS, Inc.

3490 West 140th Street • Cleveland 11, Ohio

Phone: Winton 1-2377

Fig. 8—Showing how Cook cable terminal is mounted for terminating plastic sheathed cable.

"Never in the history of a nation has prosperity been subsidized so lavishly and so wastefully. A false prosperity does exist, but it is built on pillars of sand and no sound economic development. It is bred of inflation and two decades of phenomenal government spending." —*Greenville (Ill.) Advocate.*

the two year cycle so that only the minimum number of workers will be required to handle the program in an efficient manner. The inspectors should write down the location of the plant defects found and indicate the materials that will be required for their repair or replacement. From this written information, work assignments can be prepared for handling by repair crews with minimum interference with trouble and installation work.

Small companies may find it more economical to have the inspection and repair work done by the same crew. Men to work on the crew should be specially selected for their experience and good judgement. Such workers will not waste time and material in replacing plant items that are actually in good condition, such as obsolete but satisfactory items that can be continued in service for many more years. These men should be provided with a truck carrying all necesary tools and materials for the combined inspection and repair work. In some cases, the exchange or small company manager may be the only person qualified to make the inspection. He may then conduct the inspection with a helper and prepare instructions for doing the needed repair work, or he may direct the repair crew while checking the plant.—THE END.

Fig. 6—Ankoseal cable replacing open wire lead in small town.

Construction M
With the Double
and America's
flotrol automatic
battery charger
Model
1200 B
24 Amps.
50 Volts
maintains constant
battery voltage for all loads
The FLOTROL single-phase charger provides automatic charging without moving parts. Output voltage is maintained constant within ±1% from 10% load to 100% load. Compensation for variation in input voltage is automatic and practically instantaneous.
With normal line voltage, a FLOTROL will deliver 125% to 150% of rated current, and on maximum input voltage, as high as 150% to 200%. All FLOTROL parts will withstand severe overload conditions without damage. Battery activity is reduced to a minimum and the longest possible life is assured.
WRITE for Bulletin 160—a complete catalog of FLOTROL Models for single-phase operation.
STROMBERG Telephone CARLSON
TELEPHONES, SWITCHBOARDS • SOUND EQUIP

Materials and Supplies . . .

Guarantee of Stromberg-Carlson Leading Manufacturers . . .

better than ever!

DIAMOND C POLES

For durability, use DIAMOND C

because they're made in a new and modern plant

Something new has been added!—at Pineville, Louisiana—a modern, enlarged creosoting plant offering faster delivery and better-than-ever quality in telephone poles of this well-known, well-liked brand.

Diamond C poles are made of Southern pine, carefully selected from live growing trees and graded according to physical properties desired. Each pole is pressure-treated with 8 lbs. (or more if you wish!) of grade No. 1 Creosote Oil, in accordance with AWPA specifications.

Reduce loss in revenue due to pole failure. Buy Diamond C from S-C!

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"Eveready" "Columbia" "Gray Label"

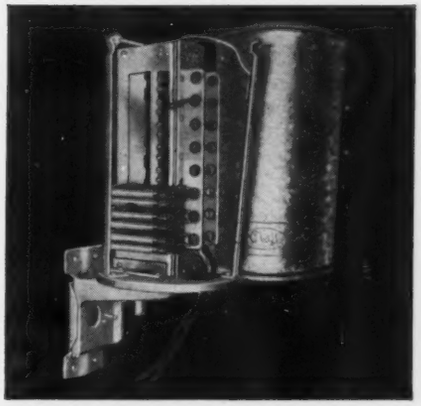
Higher sustained voltage . . . longer life . . . rock-bottom economy—these qualities are assured through the constant supervision of America's largest dry battery laboratory.

Made by the makers of the famous "Eveready" "Air Cell" Operators' Transmitter Batteries.

THE QUALITY CELL PREFERRED BY TELEPHONE ENGINEERS

cook type S-20

pole cable terminal



Can be used as a protected or unprotected terminal. Made in 6, 11, 16, or 26 pair capacity.

Cook Type S-20 Pole Cable Terminals are carefully engineered to offer the user:

MAXIMUM ECONOMY—because Cook Type H 20 Protector Units, containing fuses and primary and secondary lightning arresters, are added only as they are required.

MAXIMUM CONVENIENCE for installation and servicing. Drop wire connections are at front. Drops are led through individual insulating knockout holes. Self-soldering nozzle lies close to pole. Hood locks in raised position for working. Separate mounting bracket eliminates gaining of pole and provides easy installation.

MAXIMUM PERFORMANCE when used separately or as part of the Cook Trans-Mount System of Protection and Distribution. S-20 is of all steel construction, hot galvanized. Complete terminal designed for maximum insulation.

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EQUIPMENT AND ELECTRONIC CARILLONS • INDUSTRIAL, INTERCOMMUNICATION SYSTEMS • TELEVISION, RADIOS AND RADIO-PHONOGRAPHS

New Capital Markets

(*Continued from page 49*)

paratively high offering price. The bonds were quickly sold and went to a premium of a point on the bid side. They are convertible for ten years into common stock at the rate of 6-2/3 shares common for each $1,000 of debentures, which is equivalent to a price of $150 a share for the stock, and at the time of the new bond offering this was selling around $117. Another similar offering was by Deere & Co. $50 million debentures sold in late July; these were 3.125% due 1977 offered at 99. Demand for the bonds exceeded the supply.

Now comes Standard Oil Company of Indiana which has announced intention to file with the S.E.C. a registration statement covering the issuance of $139,647,200 of 30-year debenture bonds convertible for ten years into common stock. These obligations will be offered initially to stockholders on the basis of $100 of debentures for each eleven shares of stock held.

Except for the big Ohio Turnpike Commission $326 million of revenue bonds, offered in June on a 3.25% basis and quickly sold through a nationwide group of over 400 dealers, the markets for state and municipal bonds have been sluggish and disappointing. At the beginning of June unsold municipals on dealers' shelves were estimated at an offering value of over $250 million. Despite or perhaps in part because of the dull conditions prevailing, subsequently steady progress was made in reducing this inventory, so that toward the end of August the unsold balance was estimated at around $184 million. However, this reduction was effected in part by dealers' withdrawal of bonds from offering, the holders having decided to hold them for better conditions.

The outlook for the near term in this market is none too happy. Some large issues are being made ready for bidding, including $150 to $175 million of Public Housing Administration bonds, expected around mid-September, $30,818,000 Massachusetts Housing bonds, $30 million Los Angeles School bonds and a large number of smaller issues. The softness of U. S. Treasury issues is discouraging so far as the pricing of these tax exempt issues is concerned.

Preferred Stock

OFFERINGS OF preferred stock for public utilities during June, July and August were comparatively few, and none of them of substantial size except the $10 million Pennsylvania Power & Light $4.40 preferred. This was priced at 100 and met with a good reception, most of the others also did fairly well including the few issues shown in our Table One. By comparison with the last previous offerings of the same companies, the preferred stock money this year has cost them just about the same rate; the situation in this field in fact is comparatively more favorable for the issuers than it has been for bonds and debentures.

Tampa Electric, for example, in early June offered 50,000 shares $100 par of 4.32% preferred at 102.25 to yield 4.22%. This offering found a great demand, especially from institutions. On the other hand, Public Service of Indiana offered later in the month 800,000 shares, $25 par of 4.32% preferred, offered at 25 to yield 4.32 and proved to be a very slow mover. So did the offering of Oklahoma Natural Gas, 160,000 shares $50 par 4.92% preferred, offered at 51.25. In other words, the preferred stock market has been quite selective.

Common Stock

OFFERINGS of new common stock for telephone utilities, as shown in our Table One, have been so few and of such comparatively small amount that they cannot be taken as indicative of conditions in this market. The fact is that until August the trading markets in stocks have been strong with rising prices, in spite of the numerous unfavorable developments that materialized in the June-August quarter. June was an especially active month with the electric utilities, offerings including 700,000 shares Public Service Electric & Gas at 25.50, 2,271,300 shares Pacific Gas & Electric $25 par at 30, 170,000 shares American Gas & Electric $10 par at 60.25, 1,108,966 shares Northern States Power of Minnesota $5 par at 10.50 and many others similar. All of these offerings were oversubscribed, but in early July this market began to fade out and by August was gone. It is due for some revival this fall, however.

"Impossible Situation"

JIM LEE, general manager of the Tomball (Texas) Telephone Co. recently told a meeting of Tomball Rotarians that government taxation is "squeezing business to death."

Mr. Lee pointed out that his small telephone company paid over $15,000 last year in federal taxes alone not counting other taxes the firm paid.

THIS LITTLE RING
MEANS SMOOTHER OPERATION
LONGER WEAR
Exploded View of Joint
259P
UTICA N.Y. U.S.A.
UTICA Lubring®-the pliers that oil themselves! Porous iron lubricating ring "floats" in the joint, absorbs lubricant and feeds it as required. Keeps joint smooth and free-working. There are no finer lineman's pliers than these patented and exclusive UTICA heavy duty Lubrings.
#259P 6",7",8". Also with splicing grooves, #259S
SPECIAL HANDLES
Utica lineman's pliers can be supplied with heavy, black rubber vulcanized handles. Designed for comfortable grip, long wear and protection.
Send for booklet describing Utica's complete line of Lubring Pliers.
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It pays to use quality tools
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DROP FORGE AND TOOL CORPORATION
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News Briefs

(*Continued from page* 13)

assets of the First Farmers Telephone Association are taken over by the Souris River group.

WILDROSE, N. D.—Rural subscribers in Divide County, N. D., will be served by dial telephones if a loan application is approved by the Rural Electrification Administration in Washington.

The Northwest Mutual Aid Telephone Co., Wildrose, has applied for the loan to be paid back by subscribers over a 35-year period.

STEPHENVILLE, TEXAS—Raymond Jarratt has been elected president of the West Cross Timbers Rural Telephone Cooperative Association, Stephenville.

The group also elected V. R. Laughlin, Morgan Mill, as a secretary-treasurer and named N. H. Underwood, Alexander, vice-president.

With approximately 200 rural property owners signed for the proposed rural telephone service, officers and directors are confident they can have a minimum of 500 applications for service.

Gleason Succeeds Couch As Kansas Secretary

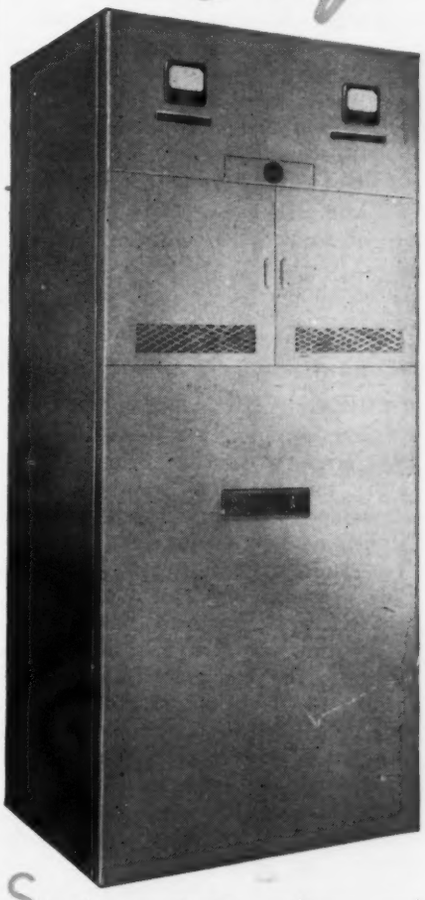
THE BOARD of Directors of the Kansas Telephone Association has announced the retirement of Herb Couch, long time secretary of the association. Mr. Couch will now devote his full time to his telephone company accounting business. Mr. Couch will maintain the location of his business in the Association's offices in Topeka where he will be readily available to association members.

Douglas Gleason has been named secretary of the association to succeed Mr. Couch. Mr. Gleason is an attorney with broad experience in telephone rate, regulatory and tax matters. He was attorney for the Kansas Corporation Commission for several years.

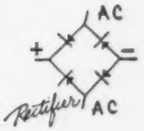
Mr. Gleason's responsibility will be the detailed management, under the general supervision of the Board of Directors, of the association's affairs. He will be available to assist member companies with all problems pertaining to their business. His legal services will be available to any company which does not have a regular attorney or whose regular attorney desires the cooperation of a specialist in the telephone field. Fees and charges for legal services will be fixed and published at an early date.

Here's a Battery Charger that is

Completely Self-Contained



- **All components in one cabinet**
- **No separate units to install**
- **Cuts installation costs**



Starting contactor, voltage and current controls, transformer, filter components, rectifier, meters and protective devices—all components necessary for battery charging and control are contained in the heavy sheet metal cabinet of the PECo Battery Charger . . . Compact design eliminates the necessity of installing separate starter and control panel and the interconnection of power and control circuits . . . AC input and DC output leads may be brought in from the top, simplifying conduit installation . . . There are no moving parts . . . No fans or other ventilating equipment required . . . No special foundations necessary.

Write for full information.

POWER EQUIPMENT *Company*

Specialists in Controlled Rectifiers Since 1935

55 ANTOINETTE STREET / DETROIT 2, MICHIGAN

Coleman Drives Shown in Spectacular Demonstration

By B. C. BURDEN
Lincoln, Neb.

A NUMBER of top telephone men were recently given a spectacular demonstration of the Coleman 4-wheel drive which is now available for application to light and heavy trucks of the type in general use by telephone and power companies. The demonstration took place at the Government testing field near Littleton, Colo. and was held just previous to the Conference of the United States Independent Telephone Association at Colorado Springs.

Aside from the privilege of seeing the amazing Coleman "driving-steering" wheel principle in full operation under extremely rugged conditions, the demonstration was of further interest to the telephone men present because of the men behind the Coleman Motors.

Chairman of the Board is John H. Agee, former vice-president and general manager of the Lincoln (Neb.) Telephone & Telegraph Co. and for many years one of the most active directors of the U.S.I.T.A. Among Mr. Agee's many contributions to the Independent industry was his excellent presentation of the telephone field's case in connection with the original wage and hour bill. Vice-president and general manager of Coleman Motors is B. I. "Fritz" Noble. Mr. Noble was also at one time General Manager and Vice-president of the Lincoln Telephone & Telegraph Co. and resigned this job in 1949 to become vice-president and general manager of Coleman Motors with headquarters at Littleton, Colo. His resignation from the telephone field was a distinct loss to the industry.

Under the energetic guidance of Mr. Noble, and Howard H. Agee (President) the Coleman Motors has in a few short years grown from a small family factory operation, to a large modern factory employing over 425 men, and with a back log of over $15,000,000 in orders.

Present production is divided between civilian and military units. One of the major units being built for the military is a mammouth towing tractor. This is used by the air force in the handling of large bombers. These units are now in use in far corners of the world.

The Coleman Conversion Unit

OF PARTICULAR interest to the telephone industry is the "*COLEMAN FRONT AXLE UNIT*" which is built for telephone construction and maintenance vehicles.

Under a unique arrangement, Coleman Motors will buy and equip standard trucks, such as Ford, International, etc., with the famous Coleman 4-wheel drive. Thus standard popular two-wheel drive limited use trucks can at nominal cost be turned into "all weather-all terrain" vehicles capable of going anywhere at any time.

Front axle drives can also be obtained from Coleman Motors and applied to existing trucks by local machine shops.

The Littleton Demonstration

THE AMAZING ability of the Coleman equipped trucks, both small and large, to maneuver in and traverse terrain which would be impassable to ordinary vehicles was shown in a spectacular and convincing demonstration staged by Noble and Agee in the foot hills of the Rocky Mountains near Denver.

Visiting telephone men after a trip through the Coleman factory were taken to the Government proving grounds southwest of Denver. The region consisted of a number of sandy, boulder strewn and unusually steep hills. In the demonstration both light (½ ton) and heavy trucks were driven up hills so steep that they seemed almost impossible to ascend. Telephone engineers who viewed the demonstration estimated the slopes to be 60° or better.

The tests showed graphically the amazing difference between ordinary two-wheel drive, and the special Coleman four-wheel drive. On each demonstration ascent, the trucks were driven as far as possible in two-wheel drive before becoming "stuck". They were then thrown into Coleman 4-wheel drive and proceeded on up the severely steep incline without the slightest hesitancy. The return trip down the long precipitous slope was a "thriller-diller" for those telephone men who rode in the demonstration vehicles. As one telephone executive said, it was like going over Niagara Falls in a barrel.

Although the down hill trip gave the guests something to think about,

(*Please turn to page 86*)

Construction M
With the Double
and America's
for longer battery life and service...
the new
RAYTHEON
"high-rate" RectiChargeR!*

This constant potential battery charger like all Raytheon RectiChargeRs, is completely automatic. It has special dry disc rectifiers plus an exclusive Raytheon Magnetic Amplifier Control Circuit which maintains precise DC voltage output at any load in the presence of wide changes in AC input voltage . . . increases battery life by eliminating over and under charging.

It handles inexpensively all normal power requirements and allows the battery to "stand by" fully charged to meet all emergency demands. You get noiseless current at constant voltage by simple connections to a power outlet and your battery. It is ideally suited for use with systems requiring power for 22/24 cells of battery.

*Reg. U. S. Pat. Off.

STROMBERG Telephone CARLSON

TELEPHONES, SWITCHBOARDS • SOUND

Materials and Supplies . . .

Guarantee of Stromberg-Carlson Leading Manufacturers . . .

for rural lines with fog, rain, humidity— hemingray insulators

(Left): Hemingray "No. 9." Made from only 9 oz. of glass, but with a maximum leakage path approaching standard long-distance design. Inner skirt surface well protected from rain-splash; long skirt protects pin itself.

(Right): Hemingray "No. 14." Its double-petticoat feature is useful wherever fog and humidity prevail. Production economy in design and lightness make its low cost attractive for rural telephone line budgets.

Manufactured by American Structural Products Company

Mfd. by Cook Electric Co.

something new in sub-station protectors

The Cook type RO-9u Sub-station protector has a rugged all-metal housing in which are mounted the A-9u 7 amp. fuses and the line and surge arresters.

This protector meets all requirements of the Underwriters' specifications and is listed by the Underwriters' Laboratories.

Insulation is of high impact bakelite, and secondary surge arresters furnish high voltage protection when fuses are blown or removed.

ANSONIA Ankoseal

the modern, all-plastic, lightweight telephone cable . . .

saves three ways—

1. Lower first cost
2. Lower installed cost
3. Lower maintenance cost

Available for aerial, duct and direct burial use. For complete information contact your nearest Stromberg-Carlson Field Office.

THE ANSONIA ELECTRICAL COMPANY

Subsidiary of Noma Electric Corporation
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PENTA POLES

FULL LENGTH TREATED *NORTHERN* WHITE CEDAR

The full length treatment protects Penta poles from top to butt. Their long life assures low per annum cost lines—proven by ten years use.

PAGE AND HILL, INC.

MINNEAPOLIS, MINN. • 50 CHURCH ST., NEW YORK, N. Y.

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What are your insulator problems?

Whatever your insulator problems, you'll find their solution in Armstrong's Glass Insulators.

They are molded of highly inert industrial glass to resist weathering and surface leakage. And they're built to take heavy loads and severe thermal shocks.

Their pinholes are hand-gauged for uniform accuracy of thread contour. Linemen like their safe, smooth seams. Yet with all their advantages, they are low in cost.

For details, see your supplier or write Armstrong Cork Company, Glass and Closure Division, 295 Fifth Avenue, New York 16, New York.

ARMSTRONG'S GLASS INSULATORS

for communications . . . for power

the sure-footed trucks showed remarkable stability and the Coleman drive gave perfect braking control.

Coleman Drives Give Long Service

THE COLEMAN drive is an old development and one of its remarkable features is its durability. Mr. Noble showed the visiting telephone men a Littleton fire truck, equipped with Coleman drive, which was over 27 years old, yet still in service.

Many Coleman drive equipped trucks are still operating in the Rocky Mountain area under the most rugged conditions, yet these vehicles are in many cases over 20 years old.

The most remarkable feature of the "Coleman Motor Story" is that it took three Nebraska men (two of them leading telephone men) to recognize the exceptional merit of the Coleman drive, and to take the small family factory of the original inventor and expand and develop it into one of the largest factory operations in the Rocky Mountain Area with a back log of over $15,000,000 in orders.

Information on Coleman Front Axle Drives is available through the American-Coleman Company in Omaha which handles the sales work for Coleman Motors and is the parent company. President of this company is also Howard H. Agee, son of John Agee.

Bass Joins Kellogg As Comptroller

THE APPOINTMENT of Sterling H. Bass as comptroller and assistant treasurer for Kellogg Switchboard & Supply Co., Chicago, Ill., an associate of International Telephone & Telegraph Corp., has been announced by Harry C. McCluskey, Kellogg's executive vice president and treasurer.

Bass, formerly a partner in the firm of George Rossetter & Co., Certified Public Accountants, had been with the accounting firm 21 years before joining the Kellogg organization.

New Catalog On SIE Transformers

Southwestern Industrial Electronics Company, 2831 Post Oak Road, Houston, Texas, now has available for distribution a new complete catalog on SIE Low Frequency Transformers and Reactors, including their new miniature line.

SIE Transformers and Chokes are

(*Please turn to page* 88)

"No competish at all... nearest stand way down by da nexta pole!"

● Our friend with the mustache is rightfully happy. Those poles are strung with Amertel 135, so the next pole is a *long* way off.

Since it permits longer spans, high-strength Amertel 135 cuts the cost of pole installation and maintenance. You don't have to dig so many holes and you don't have to set so many poles.

Quality? Amertel 135 has far better voice transmission characteristics than BB wire, and it has low electrical resistance, too.

For more information, write to American Steel & Wire, Rockefeller Building, Cleveland 13, Ohio.

LOOK FOR THIS TAG

It is your assurance of highest quality wire.

U·S·S AMERTEL

TELEPHONE & TELEGRAPH WIRE

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AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY
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TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

characterized by unusually high inductances for their size. This makes possible their excellent low frequency performance. Other features include dual coil, "hum-bucking" construction, adequate shielding, true hermetic sealing and extremely close tolerances on electrical and mechanical specifications.

This catalog also gives information on SIE's *Special* Transformers and Reactors with detailed specifications of some recent designs.

Executives Acclaim Tate Fire Alarm System

THEY CAME—they saw—they were conquered. An audience of 50 including hotel, telephone, government and insurance executives watched spellbound and then acclaimed a new and revolutionary fire alarm device which was demonstrated July 18 in the Palm Room of the Hotel Tampa Terrace, Tampa, Fla.

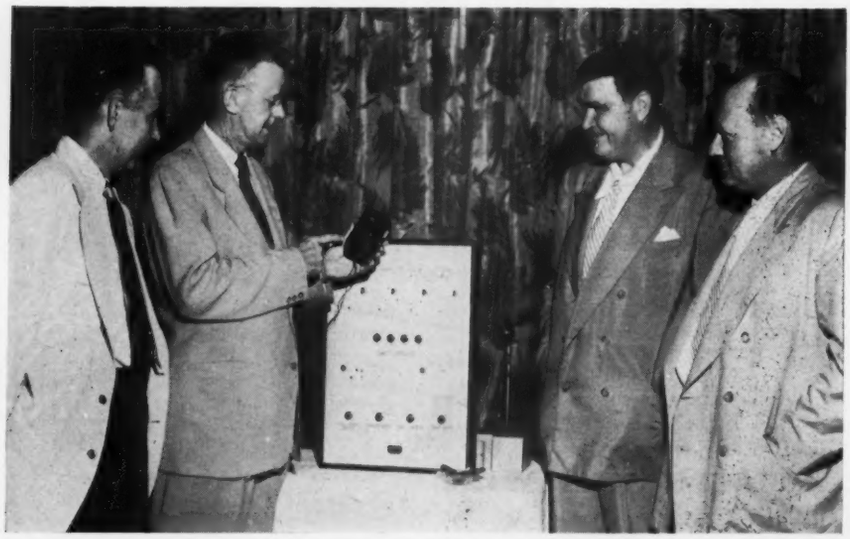
Officially introduced to the public for the first time, the Tate Automatic Fire Alarm System performs a function that practically eliminates the human factor in detecting, reporting and locating fires. It utilizes existing telephone circuits to transmit the alarm by visual and audible intermittent flashes to the hotel switchboard and is activated within 15 seconds when the temperature in any room suddenly rises 15 degrees or increases 25 degrees above a fixed setting. With a fire pin-pointed so quickly and accurately, the switchboard operator can notify occupants of the room and call the fire department before any serious damage has been caused.

Consisting of a thermostat and delayed action relay, a Tate unit is connected to the telephone in each of the Tampa Terrace's 200 rooms and its leased shops, thus affording maximum protection to its guests at all times. The hotel is the first in the country with such an installation.

Guests first witnessed the system in action when the flame from a cigarette lighter was held up to one of the Tate units at a miniature switchboard set up for demonstration purposes in the Palm Room. Then the same procedure was followed some 100 feet away where a unit was actually installed. During this latter demonstration, the hotel switchboard itself received the signal as the astonished onlookers crowded around the operator. The signal is audible even when the line is busy, it was noted. Presiding over this portion of the program was the inventor himself, Thomas J. Tate, president of the Tate Automatic Fire Alarm Co., Sylacauga, Ala.

A cocktail party and buffet supper preceded the demonstration. In his welcoming address to the assembled group, Bartley Gay, executive manager of the hotel, explained that the installation caused no interruption of the hotel's regular routine. "I was really sold on its simplicity. There was no trouble, no confusion, no interference with guest registrations or our housekeeping facilities," Mr. Gay declared. He also stated that there was probably a savings effected in the hotel's insurance rate but the

(*Please turn to page* 90)



THOMAS J. TATE, Sylacauga, Ala., inventor of an automatic fire alarm device, is shown here explaining its features and advantages to (l. to r.) Bartley Gay, executive manager of the Hotel Tampa Terrace, Tampa, Florida where the first public demonstration of the system was held July 18; Norman Shenk, commercial superintendent of the Peninsular Telephone Co., Tampa; and Carl Brorein, president of the Peninsular Telephone Co. The miniature switchboard was specially constructed for the demonstration.

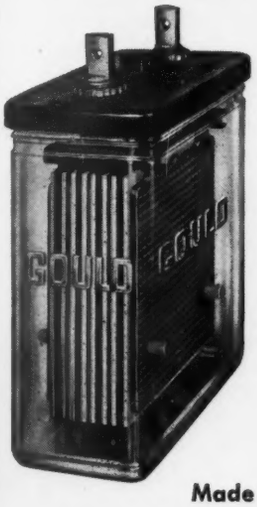
Construction M
With the Double
and America's
for telephone
ringing power
(STRAIGHT-LINE, 20 CYCLE)

Model "R"
4" x 4½" x 10"
Wt. 7½ lbs.
TELERING
is best in price,
principle and performance
Here's the ringing machine for telephone systems large or small, civilian or in military service. Ringing power obtained by direct conversion of power line frequencies. Rated output of standard unit, operating on 110-115 V, 60 CPS is Approx. 90V, at 20 CPS, 30w. Ask for data on units operating on other voltages and frequencies.
STROMBERG Telephone CARLSON
TELEPHONES, SWITCHBOARDS • SOUND

Materials and Supplies . . .

Guarantee of Stromberg-Carlson Leading Manufacturers . . .

the battery that lasts practically forever



gould planté

For long life and uniform dependable service, no other telephone battery equals the Gould Planté. It has rolled up amazing performance records, remaining in active full-float service for 20 years, 30 years and longer!

In the Planté, *all* of each positive plate is pure lead, containing *no* antimonial impurities. Thus, Gould has eliminated the primary cause of self-discharge, capacity losses and shortened battery life. Planté batteries float at constant voltage and maintain rated capacity all their life. Because they almost never need service, maintenance is negligible. If you would cut battery costs to a minimum, choose Planté.

Made by GOULD-NATIONAL BATTERIES, INC.

reversible • weatherproof

reliable "RU" cable terminal

The results of Reliable's policy of endless research and testing of parts and materials, together with a rugged design simplicity are apparent in this Reversible, Unprotected Terminal.

The flat fanning face plate, in combination with a sturdy non-corrosive aluminum cover which surrounds the wires both front and back, creates an unusually weatherproof terminal.

The reversible sliding aluminum cover also permits stub to be mounted at either top or bottom.

Such other features as: detachable mounting bracket; cast cable chamber; guide rings for jumpers; beveled washers; perfect sealing nozzle, etc. add greatly to the installation and service convenience of the Reliable "RU" Terminal, as well as providing an assurance of service life beyond actual field requirements. Ask for complete information on sizes and prices.

"Reliable" identifies the quality

the new cane *seat is cooler - cleaner - more comfortable...*

sturgis SC-240

Literally "by request"—this new operator's chair retains all the posture advantages for which Sturgis is famed and adds the cool, clean comfort of a *cane* seat. The posture-curved, well-cushioned back rest is covered in genuine leather.

The exclusive Sturgis "Follow-Flex" feature automatically adjusts to the operator's every movement, supports her restfully all the time, discourages fatigue, keeps her at top efficiency.

Other new and welcome features include a plastic-coated steel foot ring which retains its color and a handy purse holder, available on request. Six seat heights, all adjustable.

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Emergency Electric Plants *for* *Civil Defense*

No matter what happens to central station power during a bombing attack, electricity for essential defense needs is always available with Onan Electric Plants. Onan units, mounted on truck or trailer, or carried in the trunk of a car, can be rushed to any point where power and light are needed. Sturdy and dependable, Onan Electric Plants are an important link in a city's defense against disasters of any kind.

Power & Light for Every Need

Portable, Mobile, or Stationary
400 to 35,000 watts. A.C. or D.C. models.

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Tel-E-Lect "325" Attachment . . . Derrick and Digger Unit

For 3/4 and 1-TON TRUCKS

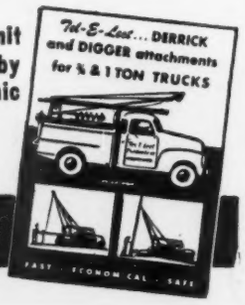
Now your regular telephone service truck can be put to the added use of pole setting. Normally it will take two men less than ten minutes to set up the derrick, attach the digger, dig the hole and set the pole—all ready for tamping. It's all accomplished with the Model 325 Derrick and Digger Attachment, made to fit all service trucks as illustrated.

Write for Bulletin 325.

★ **Answers the need for a two man construction crew**

★ **Sets poles up to 35'; takes augers 8" to 20" diameter**

★ **Packaged unit for installation by your local mechanic**



TEL-E-LECT PRODUCTS, INC.

10,013 MINNETONKA BLVD. • MINNEAPOLIS 16, MINN.

amount had not yet been determined.

The general manager of the Greater Tampa Chamber of Commerce, W. Scott Christopher, said that since the Tampa-St. Petersburg area has approximately 100,000 rooms for rent, it was satisfying to find that Florida is so sensitive to the safety of its tourists.

Speaking on behalf of the Peninsular Telephone Co., of Tampa, whose facilities are used by the hotel, Carl Brorein, Peninsular's president, said that the primary purpose of his company's entering into an agreement with Mr. Tate was to render another good service to its subscribers. "Saving lives and property are more important to us than making money as you can readily see by the $.12 per month charge per station connected," Mr. Brorein said. He added that engineering tests had been made by his company resulting in the determination that no interference occurred in voice communications when Tate's equipment was installed on telephone circuits.

Among others present were W. A. (Jack) Weatherford, George L. Archer and George F. Delaney of the Florida Hotel and Restaurant Commission; Carl Brorein, Jr., Dave Kafka, Norman Shenk, Ben Darlington and Miss Josephine Poppleton of the Peninsular Telephone Co.; Chief C. F. Dreves, Fire Marshall of Tampa; Chief Claude Nesbitt of the St. Petersburg, Fla. Fire Department; J. Hal Stallings, chairman of the Fire Prevention Committee of the Greater Tampa Chamber of Commerce; Cliff Davenport, director of the Savannah, Georgia Chamber of Commerce; Mr. & Mrs. Elgin Williams of the Alabama Ordnance Works, Childersburg, Alabama; Wayne Bevis, manager of Eastern Airlines, Tampa; Earl Mullin, Pan American Commission, Tampa and William McNevin, Tampa Insurance Agency, Inc.

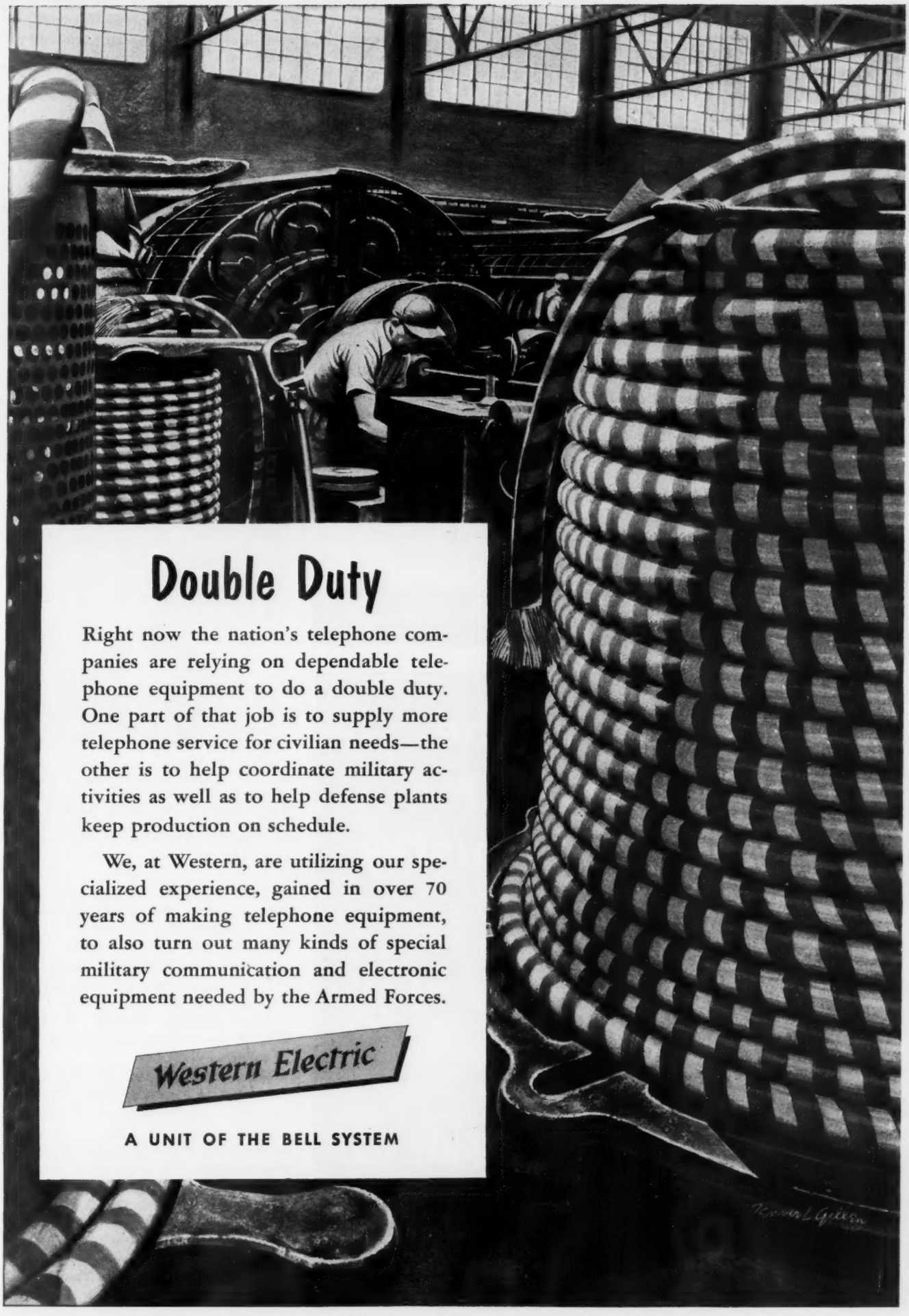
Utica Establishes New West Coast Whse. Service

IN ORDER that West Coast stocking distributors may obtain more rapid delivery on critically needed items Utica Drop Forge & Tool Corp. has established in Los Angeles a factory owned back-up stock of Utica tools.

Warehousing and shipping from this stock are handled by Utica's West Coast representatives, Dillon Stevens & Co., 3344 Emery Street, Los Angeles.

It was made clear by T. R. Hughes, Utica vice president and director of sales, that shipment from this warehouse stock is available specifically

(*Please turn to page* 92)



Double Duty

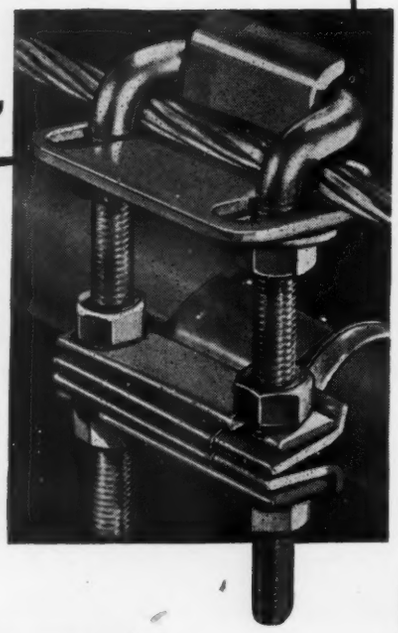
Right now the nation's telephone companies are relying on dependable telephone equipment to do a double duty. One part of that job is to supply more telephone service for civilian needs—the other is to help coordinate military activities as well as to help defense plants keep production on schedule.

We, at Western, are utilizing our specialized experience, gained in over 70 years of making telephone equipment, to also turn out many kinds of special military communication and electronic equipment needed by the Armed Forces.

Western Electric

A UNIT OF THE BELL SYSTEM

"Cable Slippage Ended-
When We Installed
KEARNEY
GRADE CLAMPS"



That's what all users of these efficient, economical clamps have said. Kearney Grade Clamps are adjustable to any spacing of the cables and the messenger. Long bearing surface, free from sharp edges, gives firm gripping pressure without injuring the cable. It's easy to install this one-piece unit because bolts and nuts are not taken apart for the placing operations. Available in single and double length clamps for either one or two cables.

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO.

For complete information and prices see your jobber — or write

JAMES R. KEARNEY CORPORATION
4236 CLAYTON AVE. • ST. LOUIS 10, MO.
Overhead and Underground Utility Equipment

Servicing the
INDEPENDENT
Telephone Industry

A
Complete Line of
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PERSONALIZED SERVICE

for emergency purposes. Normal replenishment orders or large quantity orders are to be forwarded to the factory at Utica, New York. "We recognize the Pacific Coast as a rapidly expanding major marketing area," said Hughes, "and we hope these facilities for emergency small orders will aid in the growth and prosperity of our West Coast distributors".

All Los Angeles warehouse shipments will be FOB Los Angeles. Invoicing (and remittance) will be handled by the factory at Utica, N. Y.

Caldwell (Kans.) Telephone Co. Receives Raytheon Award

THE RAYTHEON Manufacturing Co., Waltham, Mass., has announced the Caldwell (Kans.) Telephone Co., won the company's "Oldest Recti-charger Contest". The Caldwell company under the management of J. R.

John J. Eibye, manager of Raytheon's Magnetic Component Sales, standing in front of the prize-winning RectiChargeR, presenting $100 U. S. Defense Bond to J. R. Shipley, manager of the Caldwell (Kans.) Telephone Co.

Shipley, was awarded one of the very latest Raytheon RectiChargeR Models for reporting the "oldest Raytheon RectiChargeR still in service." This new equipment will replace their 1937 prize-winning model, which will be shown in Room 551A at the Hotel Conrad Hilton, during the 1952 USITA Convention at Chicago in October.

While this "oldest RectiChargeR has been in continuous trouble-free operation for 15 years, it shows absolutely no sign of wear. In fact, according to the Caldwell Telephone management, "it is as good as ever and there is no reason why the unit should not continue to give another 15 years of trouble-free service."

John J. Eibye, Raytheon's manager of Magnetic Component Sales, made the award to the company in person at Caldwell, Kans., when Mr. Shipley

Present at "Oldest RectiChargeR" ceremonies were (l. to r)—John J. Eibye, manager of Magnetic Component Sales, Raytheon Manufacturing Co., Waltham, Mass.; R. A. Stoll, field sales engineer, Kellogg Switchboard & Supply Co., Chicago, Ill.; J. R. Shipley, manager, Caldwell (Kans.) Telephone Co.; A. B. Langston, Asst. Western Manager, Kellogg Switchboard & Supply Co.

was awarded a $100 U. S. Defense Bond for reporting the lowest serial number. The Kellogg Switchboard & Supply Co., Chicago, which installed the original model, was represented at the ceremonies by R. A. Stoll, field engineer and A. B. Langston, assistant Western manager.

It is interesting to note that Mr. Shipley, who is now manager of the Caldwell Telephone Co., was field engineer for the Kellogg Co. in 1937 and personnally sold the prize-winning RectiChargeR and other equipment to the Caldwell Telephone Co.

James T. Tynan, manager of Raytheon's Equipment Sales Divisions, stated that the search was initiated to prove how simplicty of design, absence of moving and expendable parts and rugged construction enable the RectiChargeRs to stand up under all conditions of service.

National Carbon Advances Buhrer and Kleinsmith

P. M. BUHRER and C. O. KLEINSMITH have been appointed executive vice-presidents of National Carbon Co., a Division of Union Carbide & Carbon Corp., according to an announcement by A. S. Johnson, National Carbon's president.

Both Mr. Buhrer and Mr. Kleinsmith have been with National Carbon Co. for many years, Mr. Buhrer having been associated with research and development activities and Mr. Kleinsmith with sales.

Mr. Buhrer was born in Tiffin, Ohio and was graduated from Johns

(*Please turn to page* 95)

HUBBARD
"DRIVE-POINT"
machine bolts

Cone-shaped "Drive-point" enables bolt to slide through hole smoothly, speedily. Allows you to start nuts on the rolled, uniform threads without wasted motion. "Drive-point" will not mushroom when bolt is hammered out. Keeps threads clear; makes sure bolt can be re-used. Specify "Drive-point" Bolts—approved by economy-minded telephone men.

Sizes:
3/8" x 3"
to
5/8" x 20"

Recommended and Sold Through Our Distributors

AUTOMATIC ELECTRIC

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
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1033 West Van Buren Street, Chicago 7, U. S. A.

Professional Services

Installation Specialists

CENTRAL OFFICES
of all sizes
Installed - Modified - Removed
All Makes

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PENN LINE SERVICE

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Phone 765 or 686

CREWS
Construction Trimming
Station Installers Cable Splicing
Chemical Spraying
Right of Ways

HAROLD W. REYNOLDS

Centre Hall, Pa.

Staffed for Plant Construction or Management

Phone—Centre Hall, Pa. #98
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Harris-McBurney Co.

Electrical Engineers

A complete construction service for the telephone industry

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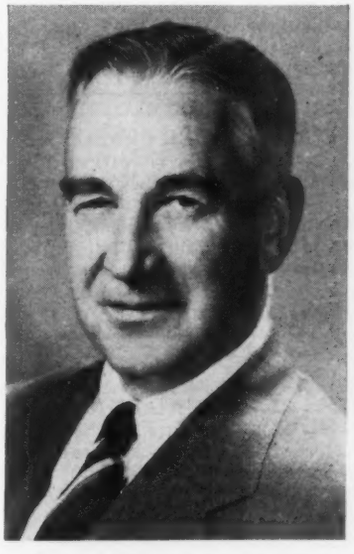
P. M. Buhrer, newly-appointed as an executive vice president of National Carbon Co.

Hopkins University in 1923 with a Bachelor of Science degree in Chemistry. He entered the National Carbon organization that same year as a development engineer in the company's Research Laboratories in Fremont, Ohio where he later served as head of product and process engineering. In 1925, he was transferred to Cleveland and eventually held the post of head of product and process engineering there. In 1943, he transferred to the New York office to hold the post of product manager. After that, he was appointed assistant general manager of National Carbon Co., and vice-president and director of National Carbon, Ltd.

Mr. Kleinsmith entered the National Carbon organization in 1914. His

(*Please turn to page* 100)



C. O. Kleinsmith was recently appointed an executive vice president of National Carbon Co.

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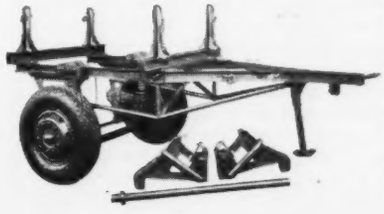
Quick loading - Easy riding

This is one model from the complete line of Highway Utility Trailer Equipment and accessories. It is used by utility companies all over the country for loading and transporting heavy and unwieldy reels of cable. It is quick and simple to load. Has a low center of gravity for safe transportation and braking at high speeds. There are two models with adjustable saddle guides to accommodate reels from 34″ to 48″ in width. Comes equipped with safety ropes and attaching parts. See your Highway representative for full information, or call or write for complete catalog.



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Quickly adjustable for either poles or cable reels. For poles, bolsters with sliding cam locking stanchions are easily mounted or unmounted. Cable reel saddles can be securely attached in a minute or two. Carries cable reels as effectively as standard cable reel trailer. Adjustable to different reel widths.

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This well-known Highway trailer has the strength to carry the occasional heavy load of poles while it is light in weight for economical carrying of average loads of poles. Load binding winch mounted on rear cross member, king pole binder on front cross member, 4 cam lock sliding stanchions make for safe transportation.

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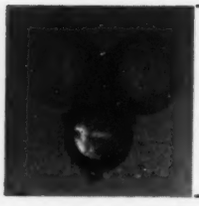

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PLANT SUPERINTENDENT

For growing telephone company with about 3,000 stations. All Dial. Three exchanges. Main exchange in city of 8,000. Applicant must have minimum of 20 years telephone experience, divided between outside plant and central office. Position is strictly engineering and executive in nature. Must know good preventive maintenance procedures. If requested, inquiries will be held in strict confidence. Give full particulars as to experience and references.

This is a new position in company created by expansion. It is an excellent opportunity for the right man. Salary open. Address all correspondence or communications to Lucian W. Spencer, Gen. Mgr., North Plains Telephone Co., Dumas, Texas.

TRAFFIC SUPERVISOR — Class A telephone company operating approximately 33,000 stations located in the Middle West. Must have experience in Manual and Automatic Central Office and have capacity to train and direct personnel in all phases of traffic work. Write giving background and experience to Box 8799, c/o Telephone Engineer.

MANAGER for rapidly expanding, extensive group of Western telephone properties. Must have administrative ability simultaneously to obtain efficient operations and achieve required, sound expansion program. Must have capacity to hire, train, and direct personnel in all phases of telephone work. Permanent position carrying substantial opportunity for qualified person. Technical, plant and commercial knowledge and experience absolute requirement. Salary commensurate with qualifications. Replies confidential. Furnish complete details of education, experience and objectives in first reply. Write Box No. 8792, c/o Telephone Engineer.

HELP WANTED—Combinationmen—Opening for qualified journeymen—permanent position, good working conditions, employees benefit plan, opportunity for advancement. Replies should include details of past employment and experience. Write South Carolina Continental Telephone Co., Sumter, So. Carolina.

MANAGER—For REA-financed cooperative operating in West Central Illinois. Required: Successful record of executive accomplishment, understanding of engineering and business experience as well as technical knowledge of automatic dial equipment essential. All applications to contain age, education, experience, minimum salary and small snap shot. Write McDonough Telephone Cooperative, Box 352, Macomb, Illinois.

HELP WANTED—MANUAL Central Office Equipment Installers and Dial or Manual Central Office Repairmen wanted. Supervisory and non-supervisory positions open. Attractive salary, working conditions, pension plan and other benefits. Excellent opportunity for advancement. State age, experience and send small photograph. General Telephone Company of Illinois, Illinois Building, Springfield.

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Juniors—With at least two years experience in outside plant design.

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Salaries will be adequate, plus insurance and yearly bonus. Past working records must be clean. Positions will be permanent. Write Box 8797, Telephone Engineer Publishing Corp.

WANTED—Salesman to cover Missouri and Kansas for telephone supply house on commission basis. Car furnished. Box 8783, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago, Ill.

CENTRAL OFFICE PERSONNEL experienced with Strowger and manual equipment. Employment affords opportunity for early advancement. Replies are strictly confidential and should include details of experience, objectives, etc. Write the Union Telephone Company, Owosso, Michigan.

HELP WANTED—EASTERN FIRM MANUFACTURING A PRODUCT FOR THE TELEPHONE FIELD, the acceptance of which is assured, needs man with engineering background. This is an exceptional opportunity for any sales engineer in telephone industry desiring bright future. Write Box No. 8800, c/o Telephone Engineer.

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POSITION WANTED — Manager or Line Foreman. 20 years experience as Line Foreman and Manager, with switchboard work, management C. B. and some dial. Married, 2 children. Desire a place as manager, line foreman, or lineman. Warren Jackson, Box 17, Newberry, Indiana.

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2 Kellogg magneto switchboards.

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Misc. W.E., Kellogg & A.E. Drops, Jacks, Keys and other switchboard parts.

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Best offer gets any part or all.

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Dumas, Texas

PRICED FOR QUICK SALE—New Type C X 200-A North Electric Automatic Switchboard Equipped With 200 lines, 16 links. 5—W. E. Comp. Type Trunks. 6—N. E. Comp. Type Trunks. Ten and Twenty Party Code Ringing. Write Box No. 8798, c/o Telephone Engineer Publishing Corp.

Like New—Replacement Parts, Kellogg Mfg. Ringers, Harmonic type, 33-1/3—50—66-2/3 Cycle. 30—42—54—66 Cycle, @ $1.00 each
Coils for above, 500 Ohm each. @ .50c each.
Induction Coils. Common battery, #79—#99, @ .50c each. #103 type. Anti-Side Tone, with connector strip, @ $1.00 each
Receivers, Kellogg, #41 type Complete, W/cords @ $1.25 each
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Automatic Electric Type 32A32 Dial Switchboard equipped for 24 volt operation with:

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90 connector terminals.
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PRICED FOR QUICK SALE—300 Magneto 5 bar wall telephones. Kellogg and Western Electric. 1600 ohm ringers, $1.50 to $3.00 each. 35c each extra when shipped, to cover cost of crating. Turtle Lake Telephone Co., Turtle Lake, Wisconsin.

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FOR SALE—Nearly new Burroughs Subscriber Billing Machine Style 30-17-00, first purchased September 1949, equipped with a 110 volt 60 cycle motor. Includes metal stand with left hand table and separate form holder. There are ten separate accumulating registers, actuated by depressing word keys describing type of service rendered suitable for telephone stub system accounting. Price $3,900 F. O. B. Destination U. S. D. E. Adler, Mutual Telephone Company, P. O. Box 2200, Honolulu, T. H.

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POLES, Southern Yellow Pine—Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.—[ADV. 16]

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TRUCK BODIES—Highway Trailer Co., Edgerton, Wisc.—[ADV. 20]

WIRE DROP & INSIDE—Jackets of neoprene, rubber or plastic. Lowell Insulated Wire Co., Lowell, Mass.—[ADV. 21]

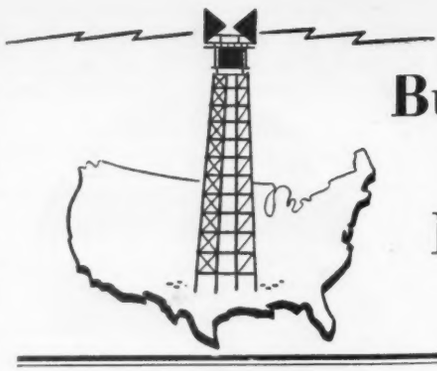
WIRE, Insulated—DATED DROP WIRE—Neoprene or Weatherproof—Alphaduct Wire & Cable Co., Milltown, N. J.—[ADV. 22]

WIRE, Insulated Drop and Bronze or Copperweld—Acorn Insulated Wire Co., Inc., 86 Freeman St., Pawtucket, R. I.—[ADV. 23]

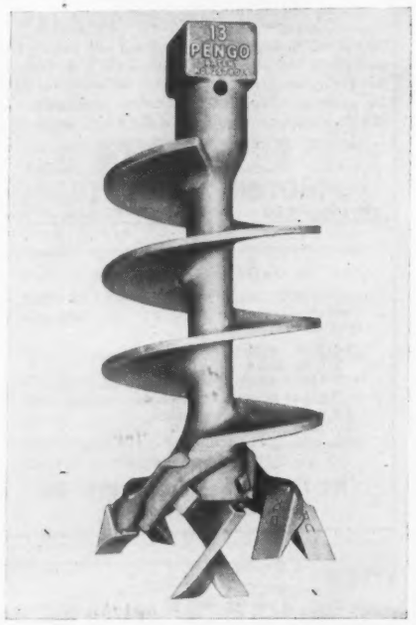
WIRE, Insulated Drop, Genuine Ironite—Paragon Electric Co., Two Rivers, Wis.—[ADV. 24]

WIRE, Insulated Drop, HT Bronze, Paraprene or Braid Insulation—Paragon Electric Co., Two Rivers, Wisc.—[ADV. 25]

WIRE, Telephone, for all inside and outside uses—Whitney Blake Company, New Haven, Conn.—[ADV. 26]



The Buyers' Directory *and* New Products' Showcase



ANCHOR-AUGER

Especially designed for boring holes for expanding anchors, three new Pengo Triple-Flight Anchor Augers have been added to the Pengo Earth Auger line manufactured by Petersen Engineering Company, Santa Clara, Calif.

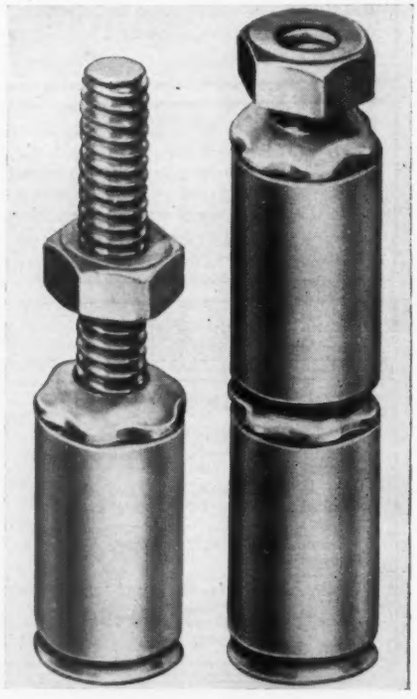
The new anchor augers retain the identical cutting features of the Pengo Earth Auger, except that a 3-flight single helix is used to carry dirt out of the hole instead of the valves utilized on larger augers. This permits completion of the hole with less than half as many trips up and down, and cleans the bottom of the hole better.

The size of the center shaft is reduced, which makes it possible for the first time with a small diameter auger to bring rocks out of the hole. This auger is intended for use in all types of soil, but is most outstanding in hardpan, sandstone, frozen ground, permafrost, or anywhere the going is tough.

Cutting heads of the Pengo Anchor Augers are equipped with the same fishtail pilot bit and replaceable Pengo Wisdom Teeth used on all Pengo Augers for rapid penetration and fast drilling in hardpan, frozen ground, most sandstones and all ordinary soils. Shank plates, bolts, etc., are also interchangeable with other Pengo Augers, so that users need maintain but a minimum stock of replacement parts.

Three sizes are now available; a 9" (for 8" expanding anchors), 11" (for 10" anchors) and 13" for (12" anchors).

The new Pengo Anchor Auger is available with different hubs to fit all makes of earth boring machines.—For literature and prices check New Product 442.



NEW ANCHOR BOLT

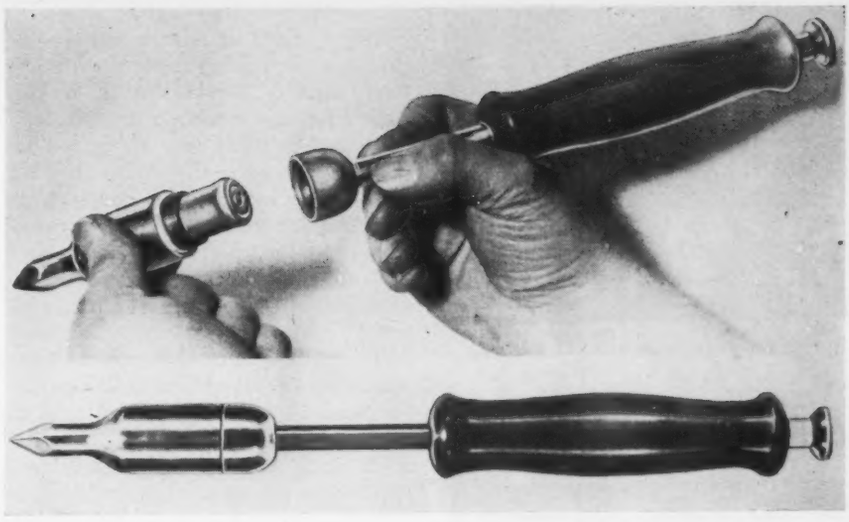
Super-Grip Anchor Bolt Co., Inc., has recently developed new single and double anchor bolt assemblies.

The new anchor bolt assemblies can be easily installed. After insertion of the anchor bolt, lead sleeve and patented, cup-shaped steel anchor, a tamping tool mushrooms the lead first. Repeated blows flatten out the steel anchor driving its ribbed steel edges into the walls of the hole. Steel reinforces lead and provides a permanent, solid anchorage that prevents bolts from loosening.

Another feature of the assembly is that the anchor can be put in masonry, brick, wood, etc. at any angle and the bolt can then be bent or off-set without disturbing the anchorage.

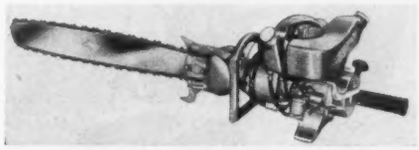
Super-Grip single anchor bolts are designed for general anchorages, double anchor bolt assemblies for places where greater anchorage is required. Single or double anchor bolt assemblies can be obtained in bolt sizes from 3/16" to ½" and up to 5" long. A tamping tool is provided free with every 100 assemblies. For additional information check New Product 443.

QUIK-SHOT SOLDERING IRON



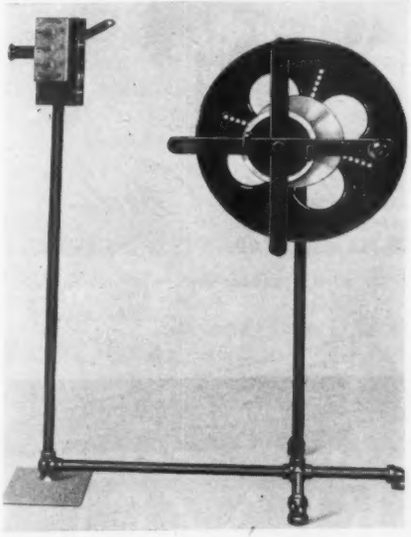
Requiring no electric current or external heat of any kind, the "Quik-Shot" soldering iron utilizes a chemical cartridge that heats the iron to working temperature in 10 seconds and maintains the iron at an average soldering temperature of 800° F for seven minutes. The cartridge is ignited by the impact of a spring rod that is pulled out and released at the back of the handle. The iron is adapted to all kinds of soldering work where line power is neither available or convenient.

The chemical mixture used in the cartridge consists of a "thermit" combination capable of generating intense heat practically instantaneously. About 250 watts equivalent energy is developed. The iron is particularly safe to use because it is free from electrical shock and fire hazards. Five interchangeable tip sizes from 3/8 to 1 inch are another feature. For complete information check New Product 445.



NEW CHAIN SAW

Smallest and lightest of the complete line of power chain saws manufactured by Titan Chain Saws, Inc., Seattle, Wash., the Titan Series 40 weighs only 34 pounds complete with an 18 inch bar and chain. The single cylinder, two cycle motor delivers power to spare for a 44-inch bar, the largest available for the Titan Series 40 saw. Here shown as a one-man saw, the Titan Series 40 can also be equipped for use by two men, or as a bow saw with a 19-inch capacity. A fully automatic clutch, a self-winding starter with extra long cable, a dustproof and waterproof self-contained magneto, and a free acting, positive locking 360 degree swivel which allows cutting from any angle are other features of the Titan Series 40 power saw.—For further information check New Product 446.



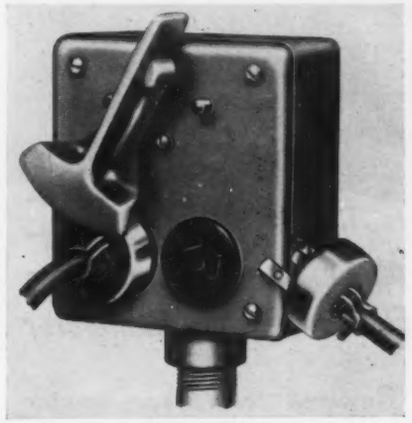
WIRE MEASURING UNIT

The new Hykon "TUMS" Wire Measuring Unit consists of Meter and Take Up Reel mounted on a light weight, yet strong and sturdy steel framework.

The Hykon Meter takes wire, rope and other flexible material up to 1" diameter. Accurate measurement is guaranteed. Registers up to 1,000 feet. Instantly reset to zero.

The Take Up Reel has a tapered cone for easy removal. The outer spokes slip off instantly. Reel dimensions are 18¾" diameter x 7" wide. Will hold up to 1500 feet of No. 14 wire. Other sizes accordingly.

The entire "TUMS" Unit is light enough to be portable, yet can be lagged down to the floor for permanent mounting.—For complete information check New Product 447.



INTER-LOCK RECEPTACLE

Tigerman Engineering Co. announces a new interlocking receptable which permits use of cord sets for locations which are hazardous. The new receptacle incorporates a sealed mercury switch which de-energizes each socket before a plug may be inserted or removed. This eliminates all danger of sparking.

The mercury switch works on a cam lever which locks cord set caps in position after they are inserted. In the locked position the mercury switch completes the circuit. A simple flip upward of the cam lever tilts the switch, breaks the circuit and allows the cord caps to be pulled out safely. The new device incorporates standard, single or duplex receptacles to fit any conventional cord set. For complete details check New Product 448.

For Quick Information on any product shown on these pages use the handy coupon shown below.

SEND IN THIS COUPON FOR MORE INFORMATION

Telephone Engineer Publishing Corp.
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Please forward complete information on the following products and services described in the September, 1952 issue of TELEPHONE ENGINEER & MANAGEMENT. (Check information desired.)

NEW PRODUCTS

NP 442..... NP 443..... NP 444..... NP 445.....
NP 446..... NP 447..... NP 448.....

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ADV. 1..... ADV. 2..... ADV. 3..... ADV. 4..... ADV. 5..... ADV. 6.....
ADV. 7..... ADV. 8..... ADV. 9..... ADV. 10..... ADV. 11..... ADV. 12.....
ADV. 13..... ADV. 14..... ADV. 15..... ADV. 16..... ADV. 17..... ADV. 18.....
ADV. 19..... ADV. 20..... ADV. 21..... ADV. 22..... ADV. 23..... ADV. 24.....
ADV. 25..... ADV. 26.....

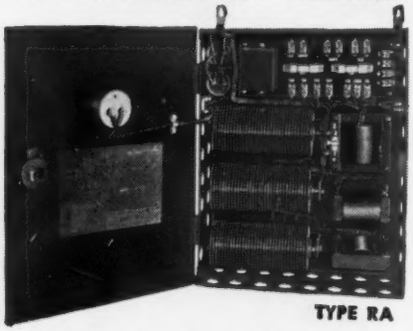
Name ..... Title.....

Company .....

Street Address .....

Town ..... Zone..... State.....

DEPENDABLE POWER
For PAX and PBX SYSTEMS
Electrox*
CONSTANT VOLTAGE BATTERY ELIMINATORS



TYPE RA

The most economical telephone power supply is an Electrox Battery Eliminator

Powered from your regular 110-volt lighting system.

Electrox Eliminators provide smooth, hum-free D.C. of required voltage — eliminating batteries.

Automatic operation. Output voltage remains practically constant, regardless of current drain. When desired, provision can be supplied to switch to emergency power source automatically.

Battery chargers and battery eliminators available in sizes and capacities to meet every power requirement.

See your Electrox Jobber. Write for free Bulletin 1465.

*T.M. Reg.

RECTIFIER DIVISION
SCHAUER
MANUFACTURING CORP

4516 Alpine Ave. Cincinnati 36, Ohio

(continued from Page 95)

National Carbon career was interrupted by service in the United States Army during World War I. He resumed his association with the company and in 1924 was appointed assistant manager in the Dallas District, later becoming district manager in the Atlanta District. From there he moved to the company's main office in New York in 1938 where he became assistant manager of the company's Eastern Division, then division manager, and after that general sales nanager in charge of consumer goods. In 1944, he was appointed vice-president of National Carbon Co. Mr. Kleinsmith was born in Cleveland, Ohio, and attended Case Institute of Technology.

Parsons and McCracken Named Kellogg V. P.'s

WILLIAM A. MCCRACKEN, works manager, assistant secretary and assistant treasurer, and Francis M. Parsons, sales manager, Kellogg Switchboard & Supply Co., Chicago, were elected vice presidents of the company, an associate of International Telephone & Telegraph Corp., in a recent meeting of the Kellogg board of directors.

In making the announcement, James H. Kellogg, company president, pointed out that the two vice presidential positions were newly-created. Harry C. McCluskey serves the company as executive vice president and treasurer, and Claude D. Manning is the company's vice president and secretary.

McCracken, who joined the company as assistant works manager in December, 1944, was appointed works

William A. McCracken, newly elected vice president of the Kellogg Swbd. & Supply Co., Chicago.

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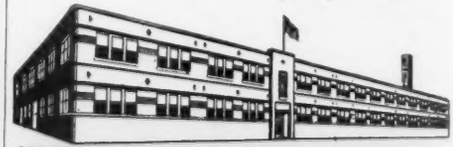
TELEPHONE CORDS

Quality Cords...
FOR ALL MAKES AND TYPES OF INSTRUMENTS
When cord replacements are needed... specify RUNZEL



RUNZEL
Cord and Wire Co.
1723 W. MONTROSE AVE.
CHICAGO 41, ILL.

Francis M. Parsons has been elected a vice president of the Kellogg Swbd. & Supply Co., Chicago.

manager in January, 1946. He was elected assistant secretary and assistant treasurer of the company in 1950, but resigned the assistant treasurer post upon his election to the vice presidency.

Before joining Kellogg, McCracken had served as engineer of manufacture for Philco corporation, and later, plant manager of the Philco subsidiary, National Union Radio Corporation, Lansdale, Pa.

Vice President Parsons, who became affiliated with the Kellogg company in 1923, left in 1928 to take over the position of superintendent, Telephone division of the Central Western Public Service Company, Omaha, Neb. Rejoining the Kellogg organization in 1934, he served successively as manager of its switchboard sales department, supervisor of field representatives, and eastern sales manager. During World War II, he served as the company's government representative in Washington, D. C. He was appointed sales manager in 1944.

The two newly-elected Kellogg vice presidents hold membership in a number of organizations. McCracken is a member of the personnel and labor relations committee of the Illinois State Chamber of Commerce, a member of Clearing branch, Society for Advancement of Management, the Independent Telephone Pioneer Association, and LaGrange (Illinois) District 105 school board.

Parsons is vice president of the Independent Telephone Pioneer Association, president of the Riverside (Illinois) Golf club, and a member of the Chicago Sales Executive club. He is also a member of the American Institute of Electrical Engineers.

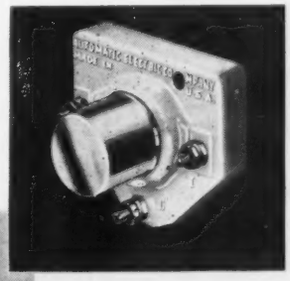
AUTOMATIC
ELECTRIC
PROTECTIVE
EQUIPMENT

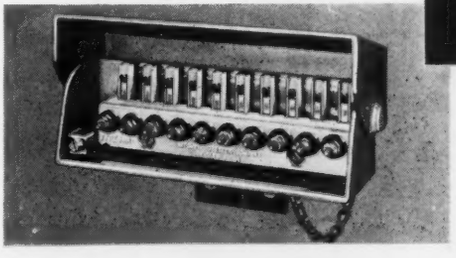
Take the TYPE 20 SUBSTATION PROTECTOR for instance (shown above):

Heft it! Feel its *solid* construction. See the double-anchored cover that won't blow off, the vented fuses that can't explode on burnout. Note especially the *self-clearing* discharge blocks. They need no resetting, save maintenance, keep your lines in service. Order Cat. No. SB-91 (with cover), or SB-88 (without).

TYPE 16 SUBSTATION ARRESTER

Note its convenient compactness. See the self-clearing discharge blocks, the cap that keeps dust from grounding your lines. Order Cat. No. SA-57.





TYPE 19-A CROSSARM ARRESTER

Look at the weatherproof cover—it keeps moisture out, saves maintenance. See the 10 self-clearing discharge blocks—appreciated by telephone men everywhere. Order Cat. No. SA-91.

Products of the Telephone Specialty Department of

AUTOMATIC ELECTRIC

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
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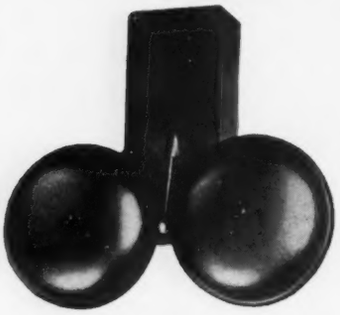
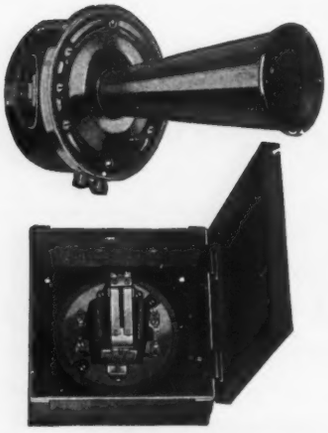


Suttle 6 inch Gong Loud Ringers

Standard 20 cycle heavy duty ringers with 6 inch steel gongs you can hear all over the place. All metal 1000 or 1600 ohm ringers.



Benjamin Howler Horn Outfits

A high frequency howler horn that operates on 110 volts A.C. Connects in on regular telephone ringing circuit with matching relay box. Will raise the dead.

Get Them from Suttle!

See Your SUTTLE Catalog

Serving Independent Telephone Men Since 1910

Suttle EQUIPMENT CO.

LAWRENCEVILLE ILLINOIS

Stromberg-Carlson Names Fink Credit Manager

ARTHUR J. FINK has been promoted to the post of general credit manager of Stromberg-Carlson Co., Rochester, N. Y., succeeding Charles W. Pritchard who was recently elected assistant treasurer, as announced by Gordon G. Hoit, vice president of the company.

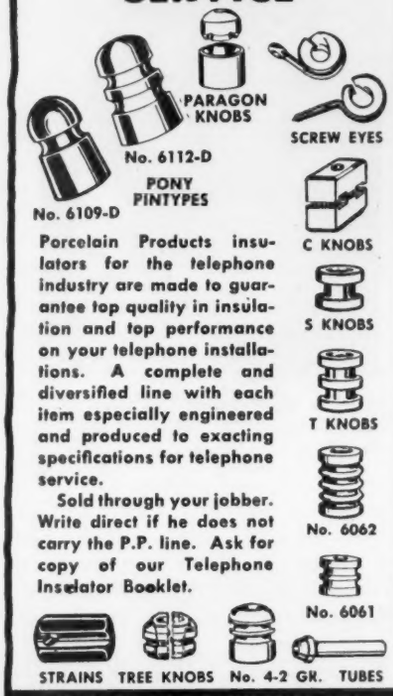
Mr. Fink joined Stromberg-Carlson in 1945, and was made assistant general credit manager in 1951. Before coming to Stromberg-Carlson, he was with the George D. B. Bonbright Company, Rochester Stockbrokers, and Dun & Bradstreet.

As general credit manager, Mr. Fink will be responsible for the supervision and operation of all credit, collection, and accounts receivable activities of Stromberg-Carlson, including the branch offices in Atlanta, Chicago, Detroit, Kansas City, and San Francisco.

Robert S. Caruthers has joined the Lenkurt Electric Co., San Carlos, Calif., manufacturers of telephone and telegraph carrier equipment, as Chief Systems Engineer. In this capacity he will be responsible for working out design objectives of new carrier systems to meet future requirements of the communications industry.

Mr. Caruthers comes to Lenkurt after 23 years with the Bell Telephone Laboratories where he was engaged principally in the development of carrier telephone systems. He received his B.S. and E.E. degrees from the University of Maryland, and holds the M.S. degree from the Massachusetts Institute of Technology. Mr. Caruthers is a member of the American Institute of Electrical Engineers and is the author of a number of published papers concerning various aspects of carrier system engineering.

for Perfect INSTALLATION SERVICE



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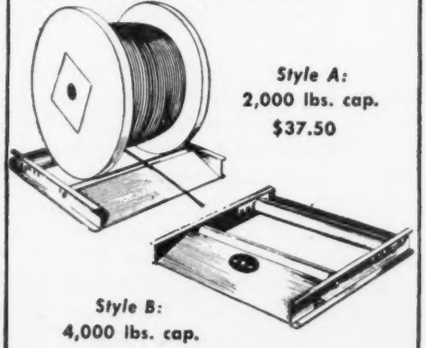
Rolls REELY roll on ROLL-A-REEL

Go modern . . . save time . . . save labor . . . save cost.

ROLL-A-REEL

enables you to reel or unreel wire, cable, rope . . . easily, quickly . . . economically.

Adjustable slots for wide variety of reel sizes. Strong . . . with low slanted front and positive front lock for loading or unloading.



Style A: 2,000 lbs. cap. $37.50

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ROLL-A-REEL

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STROMBERG | CARLSON

transmitter

Published by the makers of famous XY Equipment

VOL. 1, No. 6, SEPTEMBER, 1952

The Ohio Western Reserve --- A Case History

WELDON Case, past-president of the Ohio Association and well known to many outside of Ohio through his activities with the U.S.I.T.A., is one of the family quintet which provides excellent telephone service for Hudson, Ohio, and the surrounding area.

The Western Reserve Telephone Company, headed by Mrs. Case and her four sons, has been managed by the same family through three generations. Its present position, with a good proportion of the lines in XY dial and one of the country's first major toll centers, is strong; its future looks good. Over the years one of its prime assets is the good-will of the townfolk and the esteem given to the Case family by the community at large. But this didn't just happen. Listen to the story.

Back in 1910 there were two telephone companies in Hudson: the Ohio State Telephone Company, which was part of the group later absorbed into Ohio Bell, and the People's Telephone Company. Competition between the companies was cut-throat—not always to the subscriber's benefit—with duplicate wires and poles littering the streets, crossing and recrossing like a spiderweb.

Mr. James W. Ellsworth, wealthy Hudson philanthropist, donated a sizeable sum to the community at this time for civic enterprises. Terms of the grant required—among other things—that telephone and power poles be removed from all streets within the village limits. After several unsuccessful attempts to gain this objective (and an overall improvement in telephone service) through the existing companies, Mr. W. C. Wood of Cleveland was induced to come to Hudson and form a new company. This was before the days of regulatory bodies—individuals made their own decisions, which then had to be weighed in the court of public opinion. Mr. Wood—the father of Mrs. H. N. Case, and grandfather of the four Case brothers who

Western Reserve's general office at Hudson, Ohio

Surrounding Mrs. Harry Case at a director's meeting of the Western Reserve Telephone Co. are her four sons, (l. to r.) Baxter, Nelson, Weldon, Ted.

now manage the company—was a Western Union telegraph operator. His technical knowledge and sound business approach soon resolved the difficulties, and one strong company emerged to serve the town of Hudson.

As residents in surrounding villages saw the improvements being made at Hudson, they wanted the same grade of service for themselves. Thus it was relatively simple for Mr. Wood to acquire two additional exchanges: Twinsburg and Northfield-Macedonia, a former Bell operation. In 1927, when incorporated as the Western Reserve Telephone Company, the area served had been extended to cover Bainbridge and Aurora. Hiram was added in 1929, the Newbury Telephone Company in 1931. The operation was rounded out in 1945, when the West Richfield Company, with exchanges in Hinckley, West Richfield and Peninsula, was added; this is the total today.

Central Office in Northfield, Ohio

The Western Reserve Telephone Company has always tried to keep a little ahead of general trends. Mr. Wood installed the best magneto service available, and his pioneer underground cable system drew men from all over Ohio and nearby states to see and ask questions. Most of them were sure it wouldn't work; this prompted serious consideration for adopting the name "Hudson Underground Telephone Company."

Under Mr. Wood, Hudson was converted to common battery operation. Residents appreciated the good-looking Stromberg-Carlson instruments with their improved transmission and selective ringing. They also liked—and often took advantage of—the extra services given by the operators: finding lost pets, transferring calls when people had gone visiting, assisting in yeoman fashion during an emergency.

Portion of toll switchboard at Northfield, Ohio

Mr. Harry Case took over the reins of the company in 1936 upon the death of Mr. Wood, and was responsible for its excellent management until his death in 1949.

Progressive leadership is very much in evidence today. The company has converted most of the surrounding exchanges to Dial, with plans going forward for Hudson. The location between Akron and Cleveland led to the assignment of Northfield as a major Intertoll Center—one of the first. The telephone company worked cooperatively with Stromberg-Carlson engineers to create and install the latest type, 7-position Stromberg-Carlson No. 3 Toll Board. Operators can dial directly through the nation-wide intertoll network.

Commercial Office, Hudson, Ohio

Because the grouping of toll calls at Hudson is somewhat unusual, a new approach to the problem—Bulk Metering—is now being studied. When this is finally worked out, it may set a pattern which other independent companies can follow profitably.

Today it's all one-way traffic into Hudson, Ohio—those who live there wouldn't consider leaving, and more and more new people are choosing this town for their home. Several factors explain this: the town's location within easy commuting distance of both Cleveland and Akron; the transplanted New England flavor of the village green, with white houses set well back under the giant elms; the famed Academy, occupying the original campus of Western Reserve University.

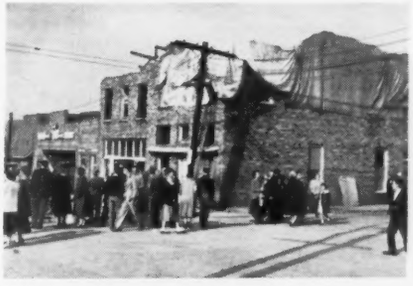
Therefore the major problem, both for the company and for the subscribers has been the tremendous growth. Lest this sound all too familiar, here are some figures. Hudson lists a 40% increase in subscribers since 1949. Northfield has jumped from 217 stations to over 1100 in the last fifteen years, with a large new suburban development rising on the outskirts. Total stations within the group have increased from 1600 in 1937 to 7240 on June 1, 1952. Weldon Case and his brother officers are meeting the situation in a manner which will provide not only for the present but can be quickly and economically expanded to afford the same high class service for the future.

A demonstration of the courage and determination of these men came last winter, when a crippling ice storm knocked out the region. Linemen were recruited from as far away as Columbus; the clock was completely ignored until temporary service was restored. War surplus wire was laid in trenches and buried under driveways until the real job of repair was finished. New cable has now replaced open wire construction between towns.

A company with such leadership and such forward-looking ideas has an assured place in the community it serves.

STROMBERG-CARLSON transmitter

Tornado Levels Town Phone Service Goes On



Close-up of the building which housed the telephone exchange. The roof was blown off, the front wall fell out, and the rain which followed the wind completely drenched the switchboard before temporary protection could be rigged up. Emergency crews toiled without sleep to restore the telephone service so urgently needed.

Unsung heroes never left their posts. At a time like this nothing could be more important in restoring morale than the faithful operator who helped frantic citizens locate friends, or assisted in directing help where it was needed most.

No words can describe the devastation of a tornado, such as hit Bruceton, Tennessee, just before midnight last March. It's at a time like this that heroes are born—when Man, feeling very small before the awful fury of the elements, calls upon hitherto untapped sources of courage and determination to rise above the emergency. We salute the Bruceton-Hollow Rock Telephone Company one and all for their amazing achievement in restoring service within four hours; without the aid of the telephone, the town could not have coped with the disaster.

A street in the business section of Bruceton. Destruction was so complete that only two buildings could be continued in use. Power lines, as well as telephone lines, were "grounded."

Bruceton is rebuilding and facing the future with courage. Coupled with the reconstruction of the town are plans for a completely modern XY dial exchange, to be completed early in 1953.

MEET Ralph Barger

Ralph Barger, Commercial Sales Manager at Stromberg-Carlson, has been a familiar figure in independent telephone circles for many years. Everyone knows him as "Cy"—few know how the nickname originated. It seems that many years ago all Rochester sang the praises of "Cy" Barger, star pitcher; young Barger became "Cy" as a matter of course. The handle has remained, and carries well over the long distance lines.

Any new employee at Stromberg-Carlson is immediately impressed by "Cy's" intimate knowledge of manufacturing processes and customer installations. There's a good reason. Starting in 1911 in the Switchboard department of the factory, Cy moved after seven years into the Engineering department and soon became sales engineer. During the period 1940-45 he was Telephone Sales Manager. He knows whereof switchboards are made.

Few other men in the industry today can —without reference to notes or specifications—tell you what type of ringing or face equipment was put in the Midway exchange back in 1921, and prescribe the correct modern replacement.

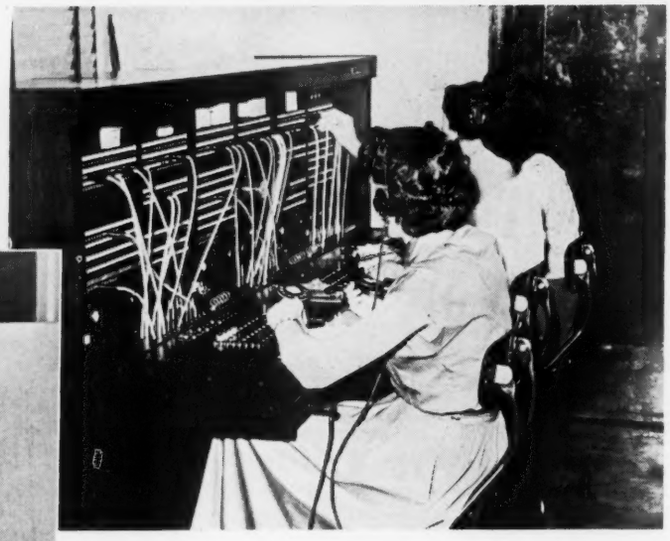
As Commercial Manager since 1945, Cy's principle contact with operating telephone companies grows out of his responsibility for all Installations and Service. Part of this is the vital job of supplying the right replacement parts to keep older exchanges in service under today's stepped-up demands. Another major responsibility is the sale of telephone type equipment to all customers other than regular operating companies.

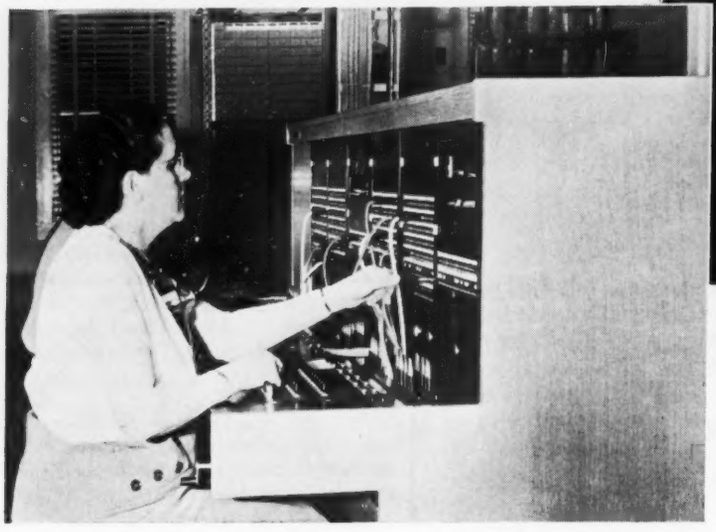
As an adjunct to his regular duties, Cy's long experience is very helpful to the development group working on new designs, to the end that such improvements will be adaptable for use in present installations.

When he leaves his office, Cy temporarily shelves the telephone man for the home gardener. Ask him about his vegetables and flowers, or how he keeps his lawn the talk of the neighborhood. He'll insist upon proper credit to Mrs. Barger, but you know it didn't just happen. Civic activities and an unusual interest in the Telephone Pioneers of America round out the picture. Behind the familiar stubby cigar is a real telephone man's man.

STROMBERG-CARLSON transmitter

Two Towns Choose New Switchboards with an Eye to the Future





WAHOO . . . designed for intertoll

RISING SUN . . . growth will be no problem

In these days of emphasis on dial, some companies prefer to continue manual operation for the present, while making long-range plans for a dial conversion in the future. The manual boards they select must provide efficient, modern service for this interim period.

Here are two examples of independent telephone companies who have improved their service, and at the same time provided themselves with equipment which will readily adapt to future progress.

New Switchboard Installed at Rising Sun, Md.

The up and coming Cecil Farmers Telephone Co. of Rising Sun, Maryland, has just cut over a new three-position switchboard to modernize their operation, which started years ago in 1904.

According to Ralph M. Reed, president, his father, David T. Reed, acquired control of the company in 1930. Working steadily toward their goal of modernizing the old magneto plant, Mr. Reed, a former county commissioner and an amateur in telephone work, with the help of his son, Ralph, spent many long hours rebuilding the outside plant. As rapidly as money could be obtained, old chestnut poles were replaced with modern creosote poles and heavily loaded aerial wire was replaced with cable.

Upon the death of David T. Reed, his son took over the operation where his father had left off in 1942. The new Stromberg-Carlson switchboard serves a total of 890 subscribers and has room for 200 more. Provision has been made for additional positions to meet future growth.

The picture shows Helen Orr of Rising Sun operating the new equipment which was cut into service March 27, 1952.

3-Position Toll Board Cut In at Wahoo, Neb.

The town of Wahoo, Nebraska is very proud of its new Stromberg-Carlson toll switchboard, which not only handles present traffic efficiently, but was planned with an eye to the future. The three-position, full multiple board was cut into service this summer by the Lincoln Telephone and Telegraph Company of Lincoln, Nebraska. The board was designed for intertoll dialing, dial keys in the cord circuits being equipped with extra springs for dialing trunks when desired. Visitors will be cordially welcomed at their attractive Wahoo office.

COMPLIMENTS THROUGH THE BACK DOOR . . .

Recently, on one of America's better-known "name" trains, a lady passenger was greatly upset as the express slowed to a stop at an unscheduled station.

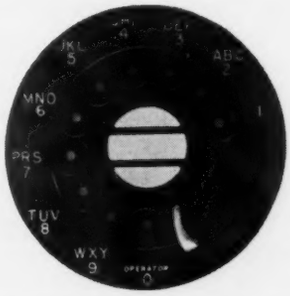
"We'll be late! My husband will be dreadfully upset," she moaned to all within hearing. When the train began to back up, her annoyance grew apace. Even as forward motion was resumed, at a slow speed, she continued her monologue on personal inconvenience.

She was too busy with her complaint to notice the wrecked freight locomotive blocking the main westbound track which the express had just left and was now creeping by on the eastbound rails. Once the danger area was skirted, the train picked up speed and arrived at the terminal on schedule.

Telephone people will see immediately a striking parallel, for trains and telephones both customarily give such good service that the public takes 100% operation for granted, and only notice the occasional deviations. Unwittingly, the annoyed passenger paid the railroad a sincere compliment. In the same way, the subscriber who complains about a telephone failure or misconnection has implied great praise for the operating company whose service makes such an occurrence a rarity.

You never know what form praise will take.

STROMBERG-CARLSON transmitter



FACTORY TRIP . . .

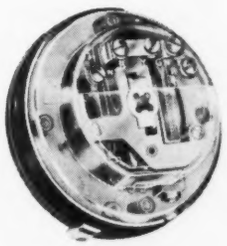
Acceptance of the new Stromberg-Carlson dial among independent telephone companies and their subscribers has been terrific. What makes this dial so good? The answer is simple. In this month's plant tour, you can see how careful engineering and production mean better performance and less upkeep for you.

How the "Bugs" Are Kept Out of the Stromberg-Carlson Telephone Dial

Front view of dial, showing extended number plate.

There are three factors that are of primary importance to telephone companies in selecting their instrument dials: long life, pulse uniformity and quietness. As a result of critical engineering, the Stromberg-Carlson dial excels in all of these features.

As a check upon long life, finished dials are taken at random from the assembly line and put on life test. Here, in a greatly accelerated operation which duplicates actual operating conditions, dials have performed satisfactorily for the equivalent of 104 years—if one had been started in the days of the Forty-niner's it would still be going strong! These tests and —even more important—field reports of long, trouble-free service under conditions where other dials have failed make it possible to guarantee a minimum of service and repair.



Rear view of dial, showing unique plastic dust cover.

A Stromberg "first" is the increasingly popular clear, plastic dust cover. This cover has been the subject of much favorable comment from the field because it provides needed protection against dust, grease, or grit, yet affords easy accessability through a removable lid for routine inspection and service.

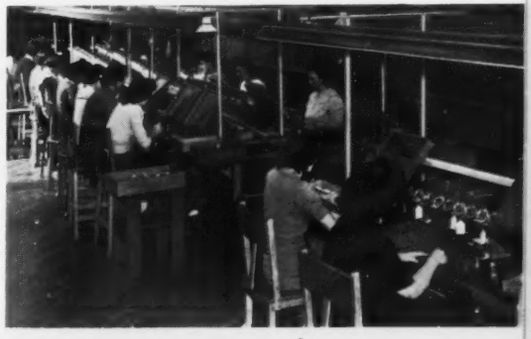
Secondly, a positive pulse must be transmitted by the spring combination, without failure, for virtually over a million operations. A technique has been developed by Stromberg-Carlson to prevent spring contact "bounce", and evil that produces false pulses and means many wrong numbers and annoyance to the subscribers.

To assure quiet, noise-free operation, extremely precise tolerances are held in machining the gears. As an added protection, a phenolic gear is included to reduce gear train noise to a minimum. The wind-up operation produces motion only in the main and secondary shafts, with other parts in action for impulsing only. This contributes both to increased life and quiet operation so characteristic of Stromberg-Carlson dials.

Actual conditions of operation are duplicated in this life test, applied to samples taken from the assembly line.

Another innovation which has received tremendous approval in the short time it has been available is the new extended number plate. The increased visibility thus afforded prevents errors in the use of the dial. Also, this location of the figures and numerals protects them from wear and marring in the normal operation of the finger wheel.

Every part is rigidly inspected before being placed on the assembly line, and an equally rigid inspection is maintained throughout its production. These dials are made on "paced" production lines by skilled operators, to bring a uniformly dependable product to the customer at the lowest possible cost.



A portion of the dial assembly line.

STROMBERG-CARLSON *transmitter*

Expanding Atlanta Office Is Youngster in S.C. Family

These three men are the "home team" of the busy Atlanta Branch Office. L. to r., George Masak, Sales Engineer; W. L. "Moon" Mollands, Branch Manager; James Hagen, Sales Engineer.

Marion Cassell, Secretary and Receptionist

A very lusty youngster is the Atlanta Branch of Stromberg-Carlson. Opened in 1947, it serves the re-vitalized and dynamic Southeastern states—Florida, Mississippi, Alabama, Georgia, North and South Carolina, Virginia and eastern Tennessee. The textile, chemical, metal and wood product industries which have been moving to this section in ever-increasing numbers have brought about a marked change in the economy of the South.

Communication facilities are a primary concern to any business—the need for better communications has been felt particularly in those areas outside the largest cities, which are served by the hundreds of Independent Telephone Companies. The Atlanta Branch, in five short years, has done much for these companies. It has placed in service or on order 425 positions of Toll, 75,000 lines of XY-Dial Equipment, many thousands of modern telephone instruments, and scores of manual installations of various types.

The year 1953 will see the cut-over of a 6,600 line XY dial office, with a 24-position Stromberg-Carlson No. 3 Toll Board equipped with keysenders, in one of the fastest-growing industrial regions of the South.

The high rate of business expansion throughout these states has brought about a phenomenal growth in toll service. In February of this year, an 80-position toll board with keysenders was cut into service, in conjunction with XY intertoll and central office equipment. This cut-over linked twenty-three cities in one area for local intertoll dialing, and the entire group into the nation-wide intertoll switching plan of the Bell System.

The rising tide of business activity in the Southeastern Region requires an ever increasing amount of PBX and other forms of internal transfer. The Atlanta Branch has found great acceptance and many repeat orders for XY and manual PBX equipment, as well as Convenience Systems, and turret type equipment. The area has also been extremely enthusiastic about the current 1400 Series telephone instruments, with extended dial number plate and self-adjustable 3-volume level ringer.

Arthur Beam, Representative For the Deep South

W. L. Mollands, known to all as "Moon," directs the Atlanta operation. He spent many years as an installer, both for Stromberg-Carlson and Western Electric; this experience has given him a keen understanding of the manager's problems in both large and small exchanges. He has also been a salesman, and in this capacity he formerly covered the entire territory.

Robert Lake, Representative Southeastern Territory

George Masak came to the Engineering Department of Stromberg-Carlson from the Automatic Electric Company where he made significant contributions to the development of modern dial systems. As senior sales engineer in the Atlanta office, he has been of great assistance in drawing up specifications of XY dial and intertoll jobs. With the increased demands upon this office, James Hagen has been brought in from a supervisory position in Installing to be the second sales engineer.

Arthur Beam, also a former installer for Stromberg-Carlson, is the sales representative for the states of Florida, Georgia, Alabama and Mississippi. Robert Lake, who was assistant to the Chief Installer in the home office, travels the states of Virginia, North and South Carolina and eastern Tennessee.

Another important person in the Atlanta office—not to be overlooked—is Mrs. Marion D. Cassell, secretary and "office manager."

The Southeast—and the Atlanta Branch—look to the future with confidence. As "Moon" Mollands would say in his characteristic way, "You ain't seen nothing yet!"

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THE BACK OF THE BOOK

By JOHN G. REYNOLDS, Managing Editor

New TV-Phone Can See All . . .

THE "sorry, dear, but I'm working at the office" dodge may be on the way out—TV-telephone has arrived.

The "I can see you" phone—latest invention of British radio engineers—is a surprise exhibit at London's annual radio show, which opened recently.

The caller's image is shown on a television screen at the other end of the circuit, and the caller similarly can see the party on the other end on a television screen in front of him.

A spokesman for the phone makers said it was hoped that TV-telephone would be installed on the New York-London trans-Atlantic line before long.

"It would be invaluable for high level intergovernmental talks when people speaking must be certain of each other's identity", he suggested.

But the TV-phone won't be invading the privacy of the home for a while yet—the present model stands as high as a kitchen cabinet and costs around $2,800.

• • •

"Substitute For Telephones . . ."

IN THESE busy days when pats on the back are few and far between, it's encouraging to run across a subscriber who takes time out to put in a nice word for the industry. Such a subscriber is Edward R. Sweetman of Indianapolis. Mr. Sweetman recently wrote the editor of the Indianapolis TIMES—"Since I'm an ardent reader of the Times, I couldn't help seeing a certain letter. It was written by H.F.J., who was complaining about the high cost of the 10-cent local call.

"Now, I'm not criticizing H.F.J., but I wonder if he has ever considered what this world would be like if there were no telephones. After reading his letter, I sat and pondered for awhile. Finally, a story from India came to my mind. It seemed a man had a magic lamp which could produce a great and powerful spirit when the right magic words were used. This spirit could do anything, including washing dishes and darning socks, but the thing that made this spirit most valuable was the power to summon people anytime of day or night no matter where the person to be summoned might be. Isn't the telephone this great spirit? What I hear now is that a telephone can be installed in cars, boats, airplanes and just everything.

"I wonder what it would be like if there were no telephones. I guess a fellow would have to go over to a girl's house every time he wanted to talk. Of course that sounds like it wouldn't be such a bad idea. I imagine that business would be very slow, and no matter how fast our mail service, it would still take a long time to contact people.

"I think H.F.J. and I should be grateful that we have such a wonderful thing as the telephone".

• • •

Down-To-Earth Definition Of Bureaucracy

THIS ANECDOTE in a recent sermon by the Rev. Kenneht W. Sollitt, pastor of the First Baptist Church, Mendota, Ill., caught our eye:

"I was once in a small hotel in Vermont when one of the guests, a foreigner unfamiliar with American ways, brought the proprietress of the inn a beautiful bouquet. The proprietress was delighted beyond words—until she discovered that her gallant guest had picked the flowers in her garden back of the inn.

"Whenever government hands you a bouquet, you can be perfectly sure it was picked out of your garden. But we go right on accepting bouquets in the vain hope that some day we will get flowers that somebody else planted and brought to bloom."

And that is a precise definition of bureaucracy as a lot of folks see it today.

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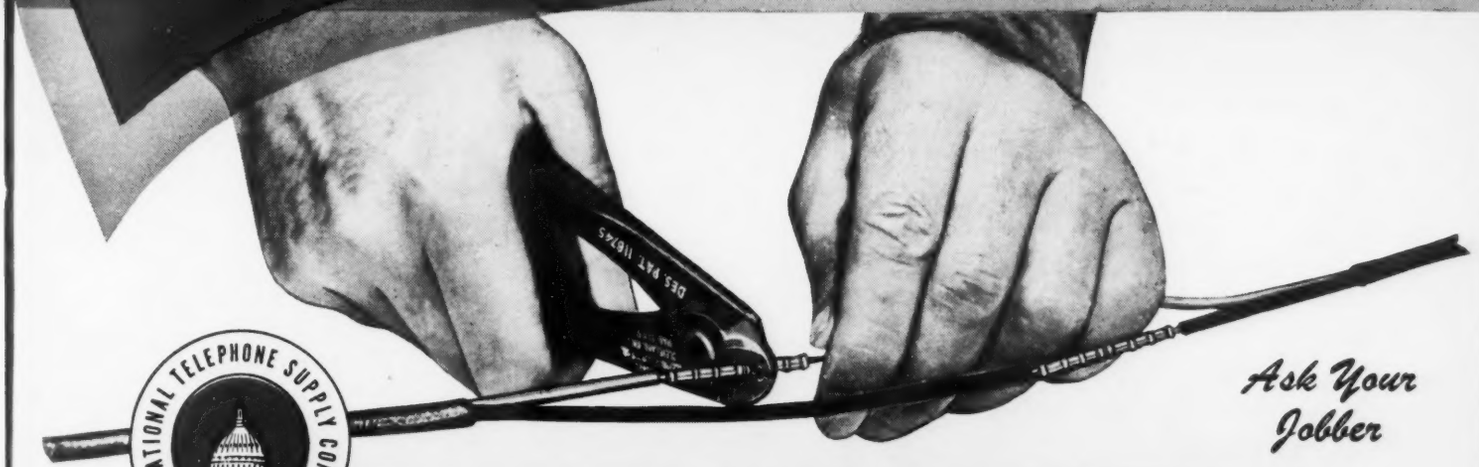

Ask Your Jobber

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ACCEPTED STANDARDS OF MEASUREMENT are the only foolproof shortcuts to efficient and economical housekeeping. In the kitchen, for example, I find that I constantly use many of these accepted standards of measurement in cooking and baking. As a matter of fact, most of my kitchen equipment is calibrated to facilitate the use of these various standards. My measuring cups are plainly marked, my oven is thermostatically controlled to regulate the heat, and the stove manufacturer even built in a clock. Most manufacturers even base their directions and recipes upon accepted standards of measurement — we housewives would be absolutely lost without them.

In nearly every field of endeavor, there are accepted standards of measurement by which relative worth or performance is judged. There are, however, a few outstanding exceptions to this rule. For example, we find that very few Independent Telephone Companies have ever checked the worth of their directories by applying a proven standard of measurement.

LET US ASK YOU JUST ONE QUESTION.

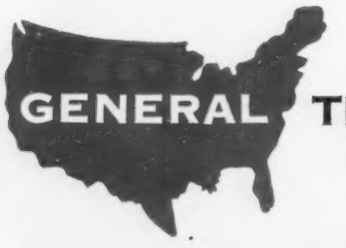
Did you measure the results of your current directory by simply comparing it with your previous issue? Unfortunately, most telephone companies are still following such a procedure.

The records we have compiled from publishing telephone directories which serve more than 4,000 Independent Telephone Exchanges have enabled us to establish positive standards by which we can measure the success of a telephone directory publishing job. Among the standards we have developed are: normal directory revenue per station; normal directory revenue per business account; normal directory revenue per advertiser; and, average number of advertisers per one hundred business accounts.

These established standards, when applied to your current directory, will show you whether or not it was as successful as it might be. And, it will be quite apparent whether or not we can increase your net profit from your directory.

Let us prove the validity of our claim. Send us a copy of your current directory and let us make a study of it without any cost or obligation whatsoever.

Mail us a copy today — you have everything to gain and nothing to lose!



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